City of Hawthorne

2010 Urban Water Management Plan

DRAFT

May, 2011

Prepared by:
California Water Service Company

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This plan was prepared for the City of Hawthorne by the Water Resource Planning Group in California Water Service Company's Engineering Department. Thomas A. Salzano, Water Resources Planning Supervisor, is responsible for the plan's preparation and can be reached at the address and telephone number listed below:

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1 Plan Preparation

In early 1996, the City of Hawthorne awarded a 15-year lease for the management of its municipal water system to California Water Service Company (Cal Water). The operation of the Hawthorne system has been integrated with Cal Water's neighboring Rancho Dominguez District. Cal Water is responsible for providing all water supply services to Hawthorne customers and will make all needed capital improvements to the system.

Cal Water is an investor-owned public utility supplying water service to 1.7 million Californians through over 435,000 connections. Its 24 separate water systems serve over 63 communities from Chico in the north to the Palos Verdes Peninsula in Southern California. California Water Service Group, California Water Service Company's parent company, is also serving communities in Washington, New Mexico and Hawaii. Rates for districts located in California are regulated by the California Public Utilities Commission (CPUC) and are set separately for each of the systems. However, because the Hawthorne system is operated under contract and is not owned by Cal Water, it is not regulated by the CPUC. For the purposes of this Urban Water Management Plan the City of Hawthorne municipal water system will be referred to as the Hawthorne District, similar to other Cal Water service areas.

1.1 Purpose

California Water Code §10644(a) requires urban water suppliers to file with the Department of Water Resources, the California State Library, and any city or county within which the supplier provides water supplies, a copy of its Urban Water Management Plan (UWMP), no later than 30 days after adoption.

All urban water suppliers as defined in Section 10617 (including wholesalers), either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an UWMP.

This UWMP is a foundation document and source of information for a Water Supply Assessment and a Written Verification of Water Supply. An UWMP also serves as:

- A long-range planning document for water supply.
- Source data for development of a regional water plan.
- A source document for cities and counties as they prepare their General Plans.
- A key component to Integrated Regional Water Management Plans.

1.2 Coordination

Cal Water completed a final draft of the UWMP for Hawthorne District on May 23, 2011. The draft was sent to the agencies listed in Table 1.3-1 for review and comment. Copies of the UWMP are available for public inspection at the City of Hawthorne Engineering Department, 445 W. 126th Street, Hawthorne, California and at Cal Water's office at 2632 W. 237th Street, Torrance, California.

Table 1.2-1 summarizes Cal Water's attempts to include various agencies in the planning process of this UWMP. The agencies listed have also been sent a copy of the final version of this report.

Table 1.2-1: Coordination with Appropriate Agencies (Table 1)

Agency	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved/ No information
City of Hawthorne	✓			✓	✓	✓	
County of Los Angeles				✓	✓	✓	
West Basin Municipal Water District	✓			✓	✓	✓	

The City of Hawthorne conducted a public meeting to present information on this UWMP on July 26, 2011, at 6:00 p.m. at the following location:

Council Chambers at City Hall
4455 W. 126th Street
Hawthorne, California

Proof of the public meeting is presented in Appendix A. The final plan was adopted by the City Council on _____, 2011 and was submitted to California Department of Water Resources within 30 days of approval.

1.3 Plan Adoption

Final comments were received by _____. The final plan was adopted by the Hawthorne City Council on _____and was submitted to California Department of Water Resources within 30 days of approval. Appendix A presents a copy of the signed Resolution of Plan Adoption. In addition to the resolution, Appendix A also contains the following:

- Any comments received during the public review of this plan.
- Minutes from the public hearing.
- Correspondence between participating agencies.

1.4 Water Management Tools

Cal Water uses the following water management tools to optimize management of water resources for the District:

- Supervisory Control and Data Acquisition (SCADA) system that provides information as to how the water system is operating, provides operational control functions, and maintains a historical record of selected data.
- Revenue Management Solutions (RMS) is an information system that Cal Water uses to maintain detailed historical records including the water sales and customer service connections.
- District Report on Production (DROP) is a database that maintains water production data for wells and purchased amounts from wholesale service connections.
- Geographical Information Systems (GIS) that combines multiple sources of information and allows data to be electronically mapped for analysis and understanding of growth and constraints on land development and water use.
- Laboratory Information Management System (LIMS) provides water quality data for detailed constituent analysis of raw and finished water, determination of compliance with state and federal drinking water standards, and trends in water quality changes.
- Computerized Maintenance Management System (CMMS) is a computerized database system that tracks asset data, assigns and schedules maintenance work orders, and reports on maintenance related activities. A CMMS allows a business to manage maintenance work more effectively and is a stepping stone towards Asset Management (AM).
- Groundwater Level Monitoring Program tracks groundwater fluctuations over time and is used to inform resource management and well maintenance decisions.

1.5 Plan Organization

This plan is organized as described in the following outline. The corresponding provisions of the California Urban Water Management Planning Act are included as references. Tables in this plan have cross-references to the tables as listed in the "Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan" prepared by the California Department of Water Resources.

Section	Table 1.5-1: Plan Organization	Act Provision
Contact Sheet	List of Contact Persons	-
Section 1	Plan Preparation This section describes the requirement and the purpose of the Urban Water Management Planning Act, coordination, plan adoption, schedule, and management tools.	§10620 (d)(2) §10621(a -b) §10635(b) §10642 §10643 §10644 (a) §10645
Section 2	System Description This section describes the District service area and includes area information, population estimate, and climate description.	§10631 (a)
Section 3	System Demands This section describes the water supply projection methodology used to estimate water demands and supply requirements to 2040. It also includes a discussion of SBx7-7 baselines and targets.	§10631 §10608.20(e)
Section 4	System Supplies This section includes a detailed discussion of the water supply sources.	§10631 §10633 §10634
Section 5	Water Supply Reliability and Water Shortage Contingency Planning This section includes a discussion of the water supply reliability and describes the District's planning for water shortages during drought and emergency situations.	§10620 §10631 (d) §10632 §10634 §10635 (a)
Section 6	Demand Management Measures This section describes Cal Water's conservation programs.	§10631
Section 7	DWR Checklist This section includes the completed DWR UWMP Checklist.	
Appendix A	Resolution To Adopt The Urban Water Management Plan This section includes the following: 1) Resolution 2) Letters to and comments from various agencies 3) Minutes from the public hearing 4) Correspondence between Cal Water and participating agencies	§10621 (b) §10642 §10644 (a)
Appendix B	Service Area Map This appendix includes the service area map of the District as filed with the Public Utilities Commission.	-
Appendix C	Water Supply, Demand, And Projection Worksheets This section includes the spreadsheets used to estimate the water demand for the District.	-
Appendix D	DWR Groundwater Bulletin 118 Sections from the Department of Water Resources Bulletin 118 are included as reference and provide details of the basin for the District.	§10631 (b)(1-4)

Section	Table 1.5-1: Plan Organization	Act Provision
Appendix E	SBx7-7 Target Analysis This section contains the analysis needed to formulate targets for Sbx7-7 compliance.	-
Appendix F	Water Efficient Landscape Guidelines This section contains the Guideline for Water Efficient Landscape that Cal Water uses at its properties, including renovations.	-
Appendix G	Purchase Agreement with West Basin Municipal Water District A copy of the Purchase Agreement with West Basin Municipal Water District is attached for reference.	-
Appendix H	Adjudication Order The adjudication order for the West Coast Basin is attached for reference.	§10631 (b)(1-4)
Appendix I	WRD Strategic Plan This section contains the groundwater management plan.	§10631

1.6 Implementation of Previous UWMP

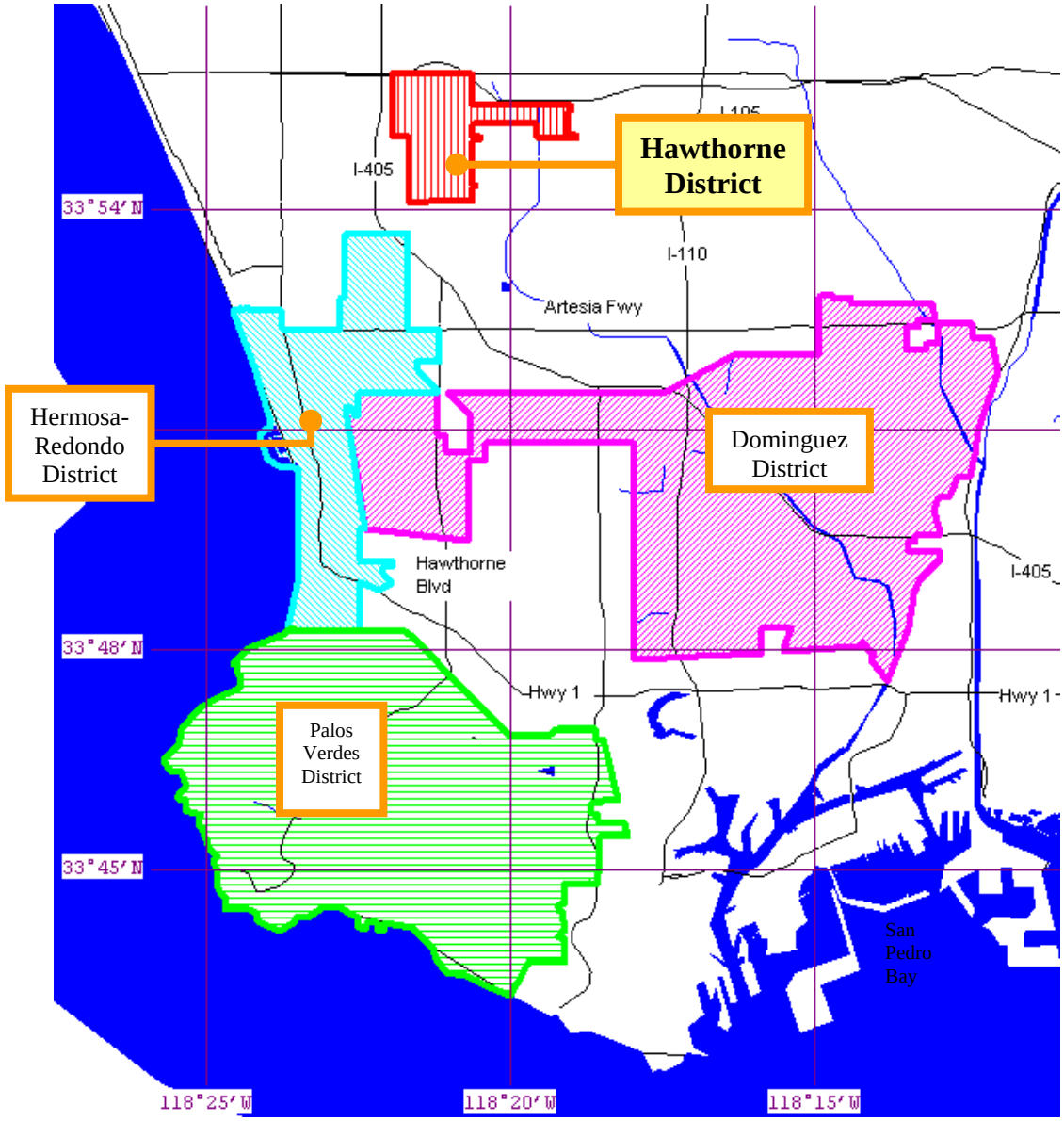
The City of Hawthorne will follow the California Water Code and file an UWMP at least once every five years on or before December 31, in years ending in five and zero. The Plan for Hawthorne was last submitted in 2005.

2 System Description

2.1 Service Area Description

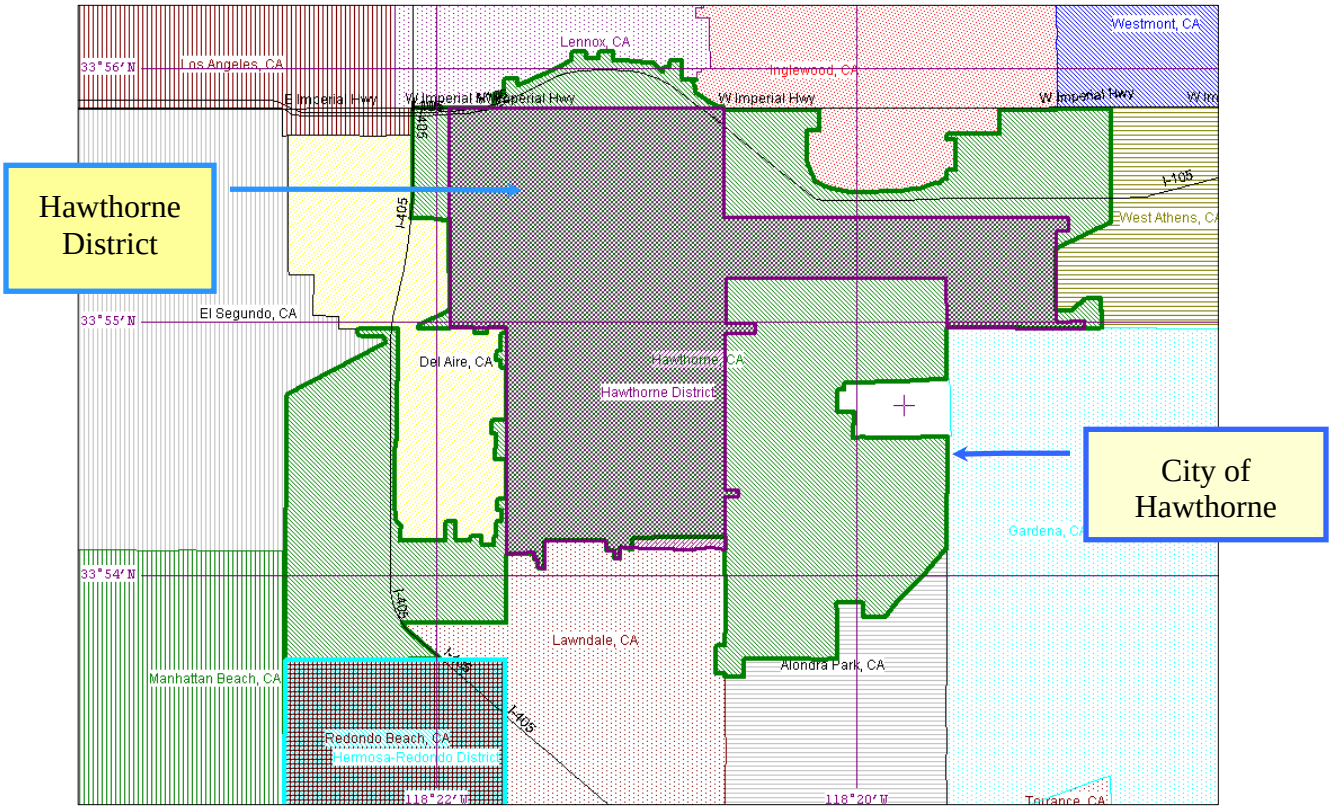
The Hawthorne District is located at the southwest corner of the Los Angeles coastal plain, approximately twenty miles from downtown Los Angeles. The general location of the District is shown in the Figure 2.1-1. The service area is built upon the alluvial deposits situated adjacent to the beaches of Santa Monica Bay. The service area map (SAM) is presented in Appendix B.

Figure 2.1-1: General Location of Hawthorne District



The service area covers approximately three square miles, encompassing half of the area of City of Hawthorne, as seen in Figure 2.1-2. The system is bounded on the north by the Cities of Lennox, Inglewood, on the east and the west by areas of Los Angeles County, and on the south by the City of Lawndale.

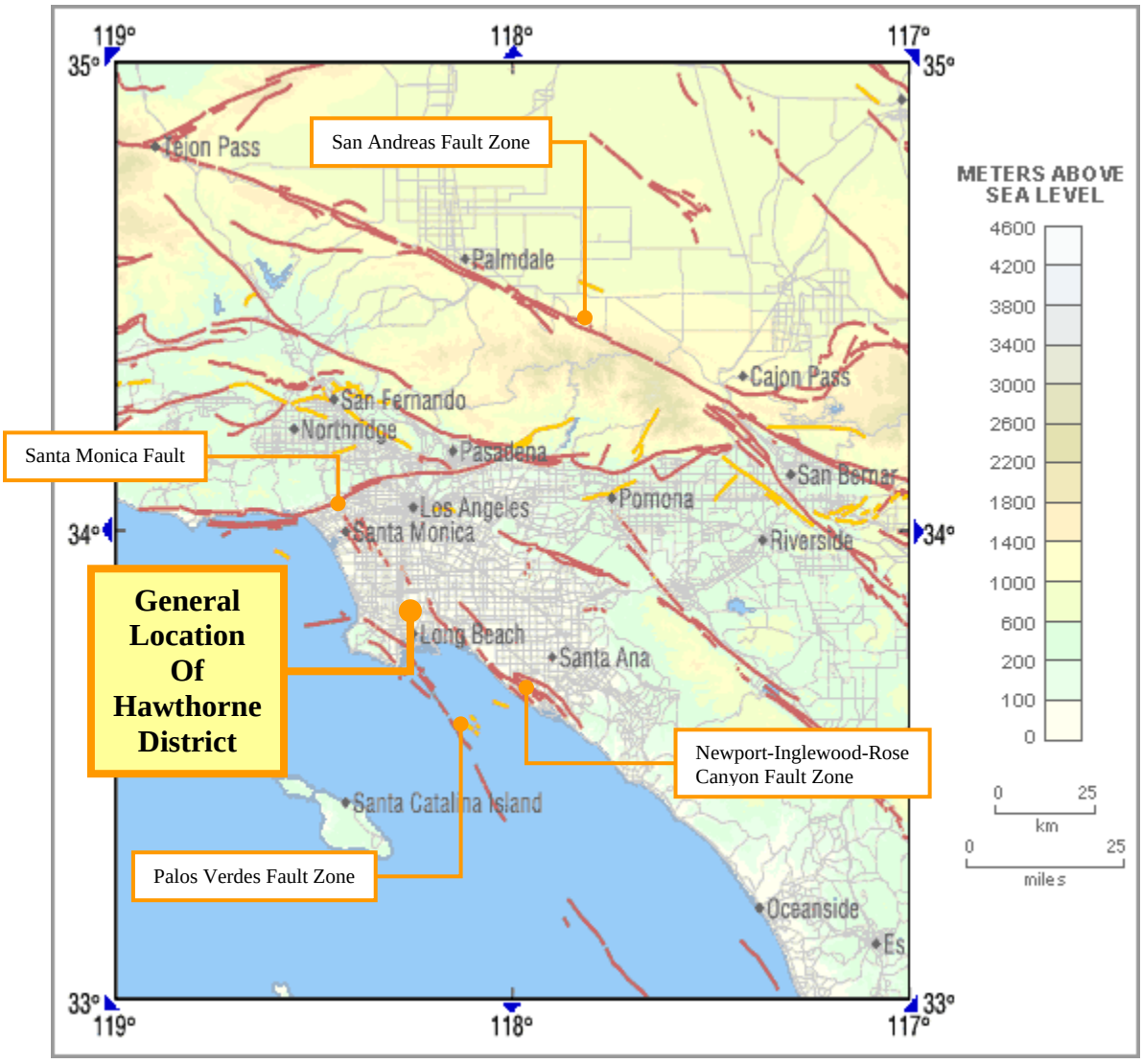
Figure 2.1-2: General Service Area of Hermosa-Redondo District



Major transportation links for the District include the San Diego Freeway (Interstate 405) and the Glenn Anderson Freeway (also known as the Century Freeway - Interstate 105), that run to the west of the District and the north of the District, respectively. El Segundo and Hawthorne Boulevard intersect near the middle of the District. The Los Angeles International Airport (LAX) is less then four miles northwest of the District.

Major geologic features of the region include the Newport-Inglewood Fault system, which lies on the eastern boundary of the District, Figure 2.1-2. The Newport-Inglewood Fault has been identified as one of the most dangerous faults in the Los Angeles area. Major earthquakes occurring on this fault could disrupt water service to the area.

Figure 2.1-3: Active Fault Lines



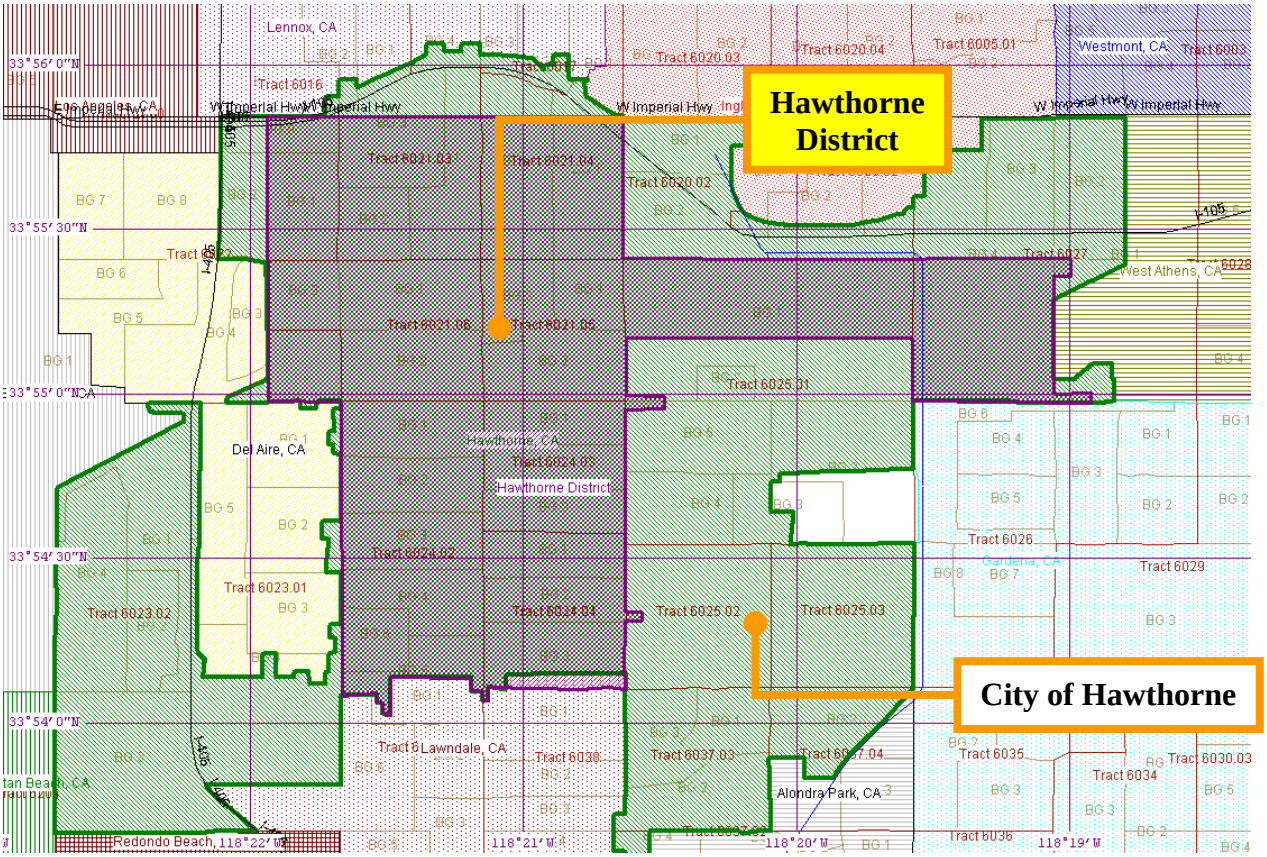
2.2 Service Area Population

The growth rate in the City of Hawthorne has progressed at a relatively gradual rate. Growth in total services has averaged -0.06 percent per year over the past five years as a result of the recent downturn in the economy and housing market. For the last ten years growth averaged 0.05 percent per year. For the 14 years that Cal Water has operated the Hawthorne system, the growth rate has averaged 0.13 percent.

Based on 2000 U.S. Census data, considering actual service connection growth and assuming that density has remained unchanged since the census was conducted, as of December 2009, the district's population is estimated at approximately 46,136. A density of 3.85 persons per residential service (single family services plus multifamily units) was used for this estimate.

The process for estimating population in the Hawthorne District began by overlaying the U.S. Census 2000 Block data with the Cal Water service area map (SAM), as shown in Figure 2.2-1.

Figure 2.2-1: Approximated SAM with US Census 2000 Tract Map



A summary of the census data for the Year 2000 is shown in Table 2.2-1. LandView 5 and MARPLOT ® software were used to generate the data[1].

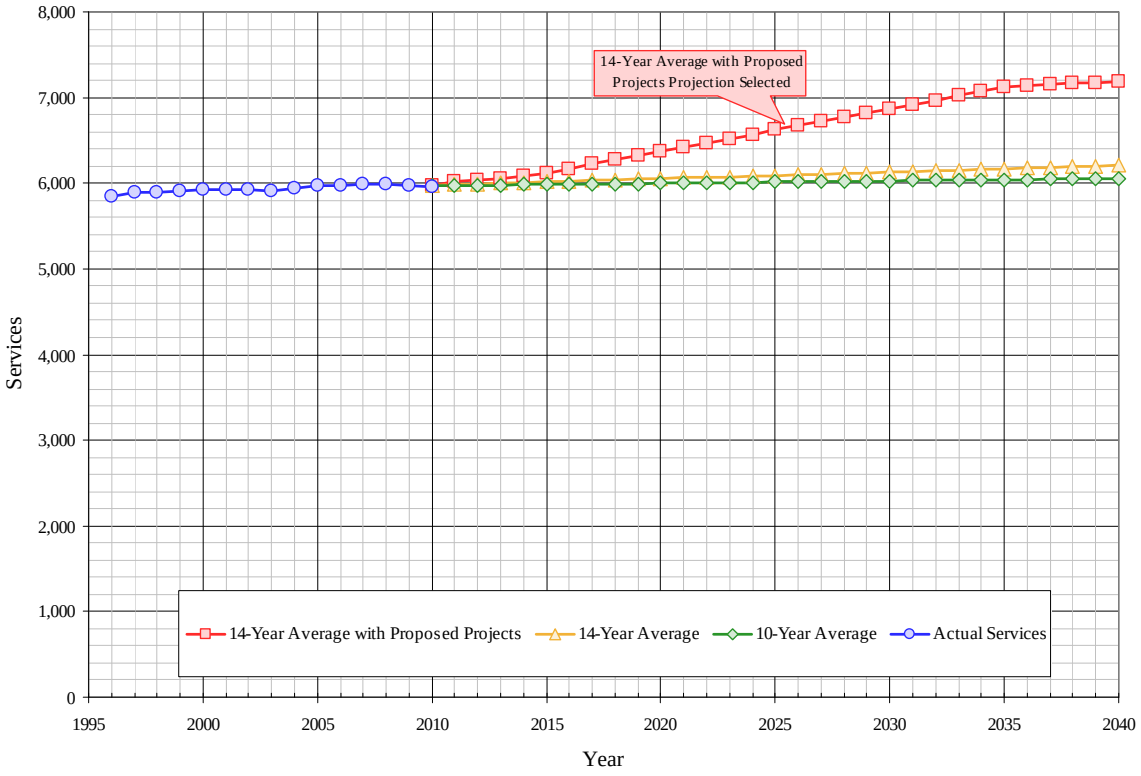
Table 2.2-1: Summary of Census 2000 Data			
	Census Tract Blocks	**Population**	**Housing Units**
Hawthorne Service Area	206	43,088	14,707

This data was used as a baseline for estimating population starting in 2000. To calculate estimated population after 2000, the Census 2000 population was then divided by the total number of dwelling units served in 2000 to produce a population density value. This density value was then multiplied by the number of dwelling units in each future year.

To establish a range of future service counts the past ten-year and 14-year growth rates for each service type were continued to estimate future service counts through 2040. A third growth rate based on information from the City of Hawthorne that includes additional development projects was also considered. These projects lead to a growth rate above what could be expected from the 14 year growth rate. This projection was chosen to project service counts because it is based on actual proposed projects. A comparison of service connection growth rates is shown in Figure 2.2-2.

[1] LandView 5 and MARPLOT ® software, US Census Bureau/Environmental Protection Agency, http://www.census.gov/geo/landview/lv5/lv5.html, http://www.epa.gov/ceppo/cameo/marplot.htm

Figure 2.2-2: Historical & Projected Services



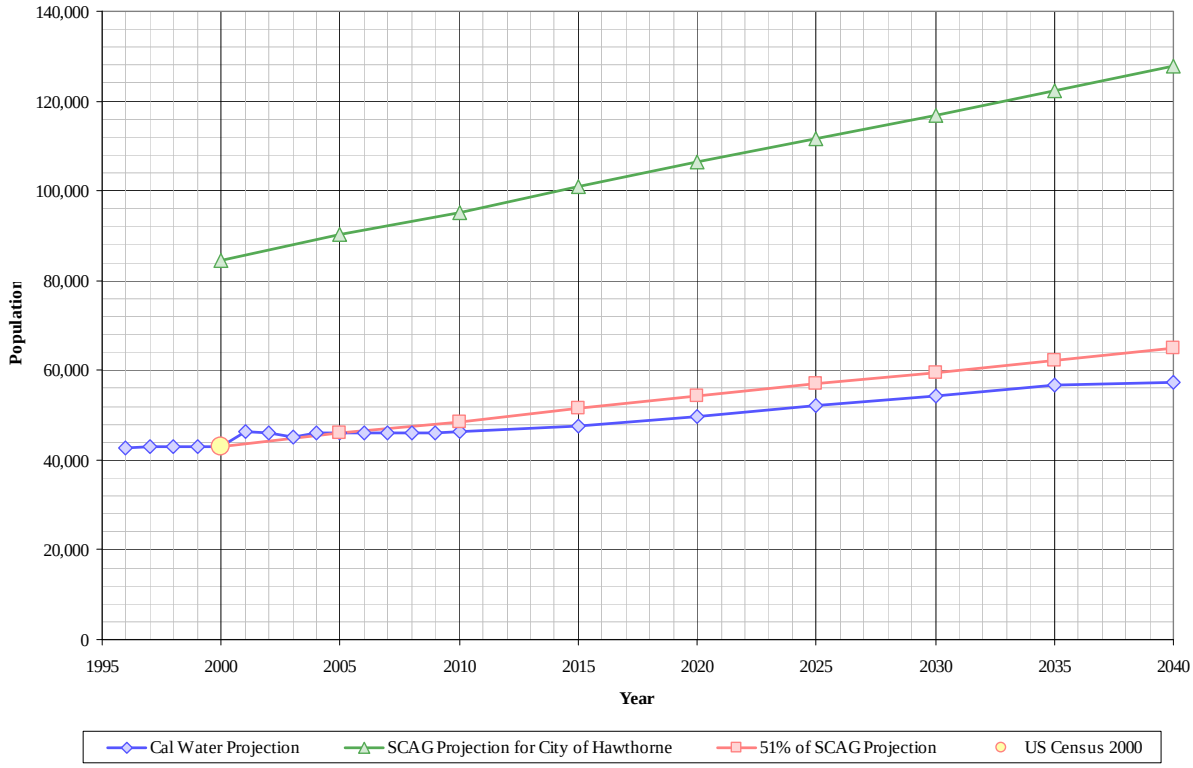
Cal Water estimates the service area's population could reach 57,423 by 2040. Table 2.2-2 lists the population growth in 5-year increments.

Table 2.2-2: Population - Current and Projected (Table 2)

	2005	2010	2015	2020	2025	2030	2035	2040
Service Area Population	46,190	46,283	47,644	49,852	52,082	54,334	56,700	57,423

The population projections based on District service counts and Southern California Association of Governments (SCAG) Census Data are presented in Figure 2.2-3[2].

Figure 2.2-3: Estimated Population Comparison



The population projections using the SCAG data assumes that the District makes up 51 percent of the total population for the City of Hawthorne. The percent of the SCAG trend data chosen agrees with the US Census data population estimate for 2000. From the graph above, it is shown that the growth rate chosen for the projection is nearly identical with the projected rate of increase for the SCAG data.

Similarly, the housing count was estimated by comparing the US Census 2000 data and the service counts for the Hawthorne District, Figure 2.2-4. Although the rate of increase is similar for all sources, Cal Water's service count for the year 2000 is lower than the US Census 2000 housing units estimate. This is most likely the result of District service connections including one meter that serves several housing units, such as duplexes or apartments, whereas the US Census data combines all of the housing units (single and multifamily residences). The US Census 2000 housing unit figure was established by summarizing the individual census blocks enclosed within the service area of the District.

[2] SCAG Population and Housing Projection, Southern California Association of Governments, http://www.scag.ca.gov/forecast/index.htm

Figure 2.2-4: Estimated Housing Comparison

2.3 Climate

The climate for the Hawthorne District is a mild Mediterranean type climate that is regulated by the Pacific Ocean. The area is characterized by cool winters and warm summers. The greatest amounts of precipitation fall during late autumn, winter, and early spring. Table 2.3-1 lists the average annual conditions for the closest weather station to Hawthorne, which is at the Los Angeles airport. Additional climate data is provided in Appendix C, worksheet 18[3].

Table 2.3-1: Average Annual Climate (Table 3)

Average Temperature	Average Rainfall	Annual Total Evapo-transpiration
62.8°F	12.0 inches	46.6 inches/month

[3] Western Regional Climate Center, Torrance Weather Station, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosa

Figure 2.3-1 displays the average monthly temperature and rainfall.

Figure 2.3-1: Average Monthly Temperature and Rainfall

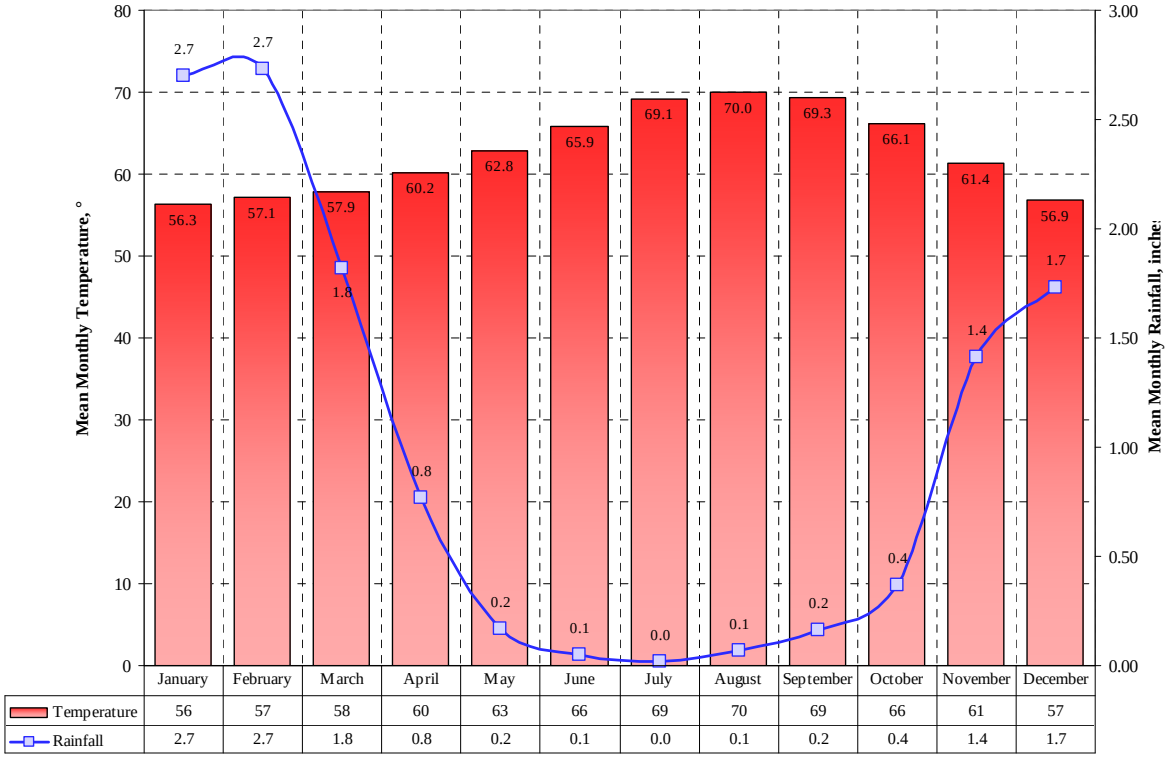
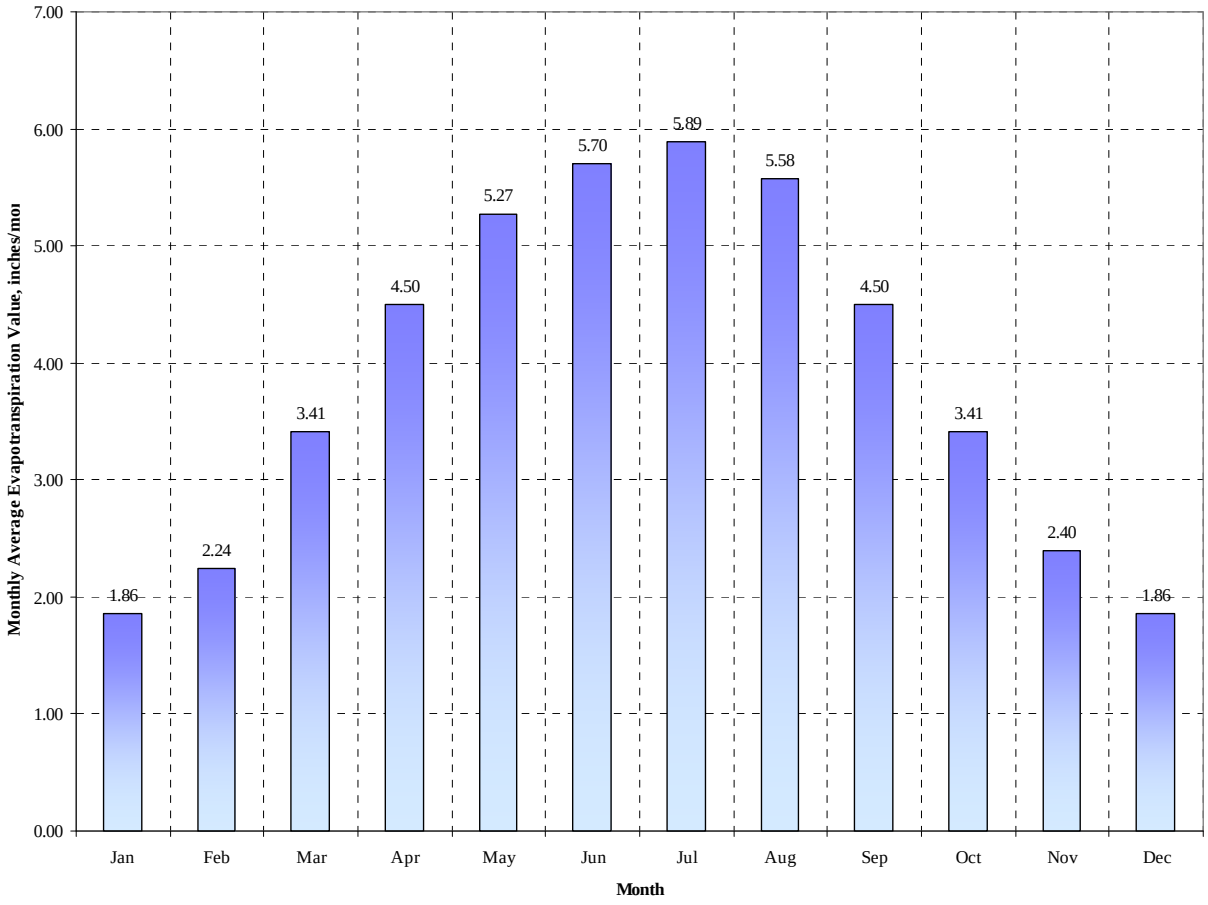


Figure 2.3-2 displays the monthly average evapotranspiration values for the area of the District[4]. Evapotranspiration is the sum of water loss from a watershed because of the processes of evaporation from the earth's surface and transpiration from plant leaves. The annual estimated transpiration for Hawthorne is 46.6 inches. The average annual rainfall of 12.0 inches is only 26 percent of the annual total evapotranspiration value.

Figure 2.3-2: Monthly Average ETo Values



[4] California Irrigation Management Information System (CIMIS), EvapoTranspiration (Eto) Zones Map - Zone 15, http://wwwcimis.water.ca.gov/cimis/welcome.jsp

3 System Demands

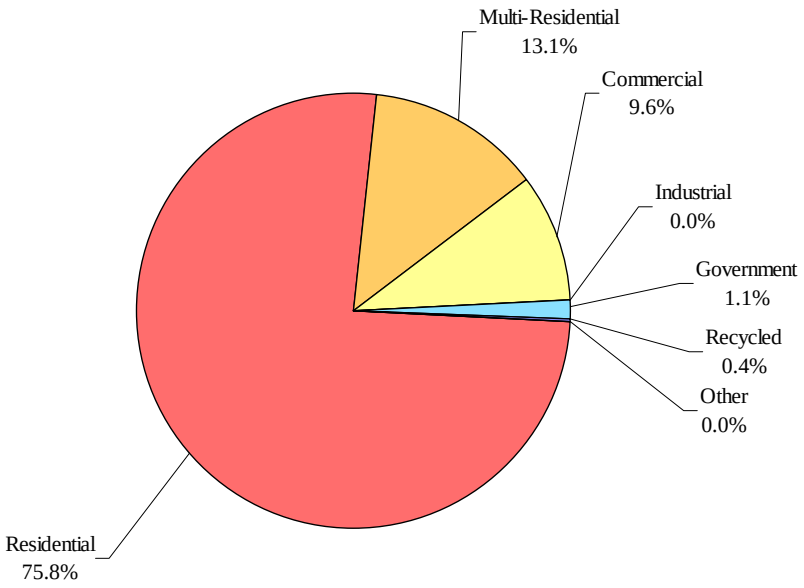
3.1 Distribution of Services

The different customer connection categories are classified as follows:

- Single Family Residential
- Multifamily Residential
- Commercial
- Industrial
- Government
- Other

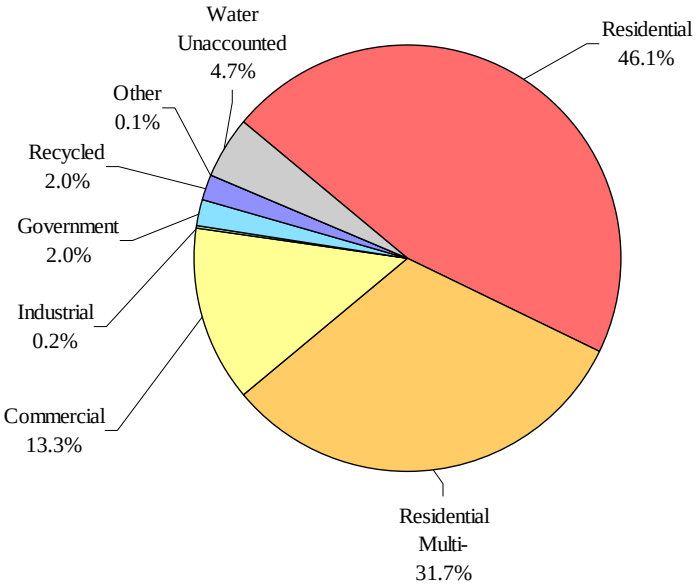
The trend for property development in Hawthorne is for increasing density through redevelopment of existing parcels. The average annual service count for the calendar year 2010 was 5,952. Single family residential services totaled 4,511 or 75.8 percent of all services; multifamily residential services totaled 779 or 13.1 percent; and commercial totaled 569 or 9.6 percent. All other customer classes comprised the remaining 1.5 percent. The distribution of services for the year 2010 is shown in Figure 3.1-1.

Figure 3.1-1: Distribution of Services (2010)



Although single family residential services account for almost 76 percent of total services, single family residential water use represents the smallest demand per service, resulting in this category using 46.1 percent of the total demand. Multifamily residential use accounts for 31.7 percent of the total demand, for a combined residential total of 77.8 percent.

Figure 3.1-2: Percent of Total Demand by Type of Use (2010)



3.2 Historical and Current Water Demand

Historical sales values are illustrated in Figure 3.2-1. Historical service counts for the district are illustrated in Figure 3.2-2.

Figure 3.2-1: Historical Sales

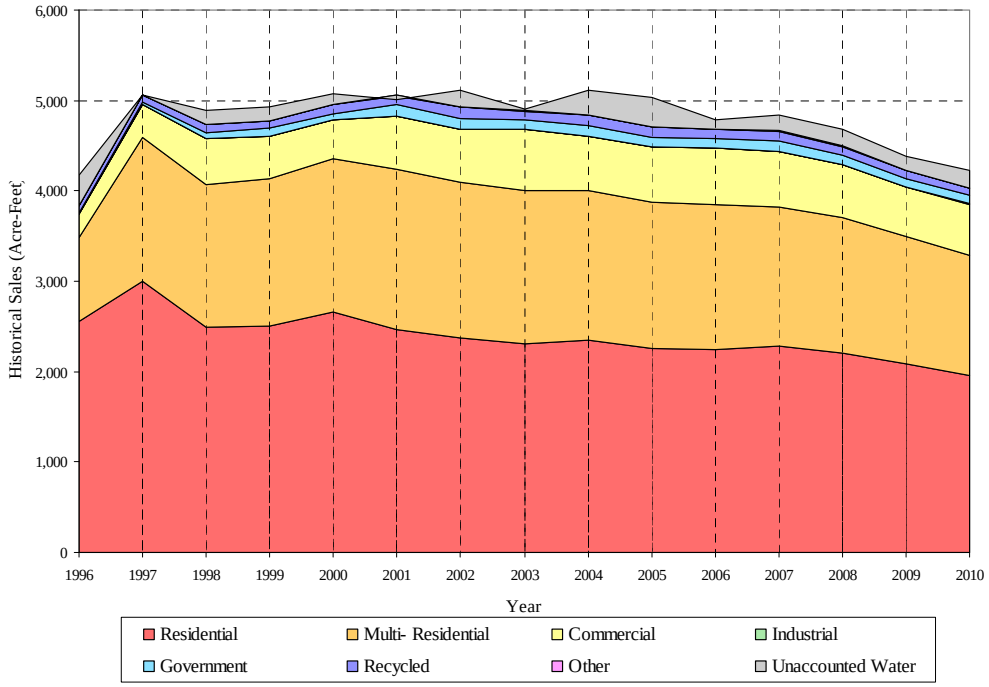
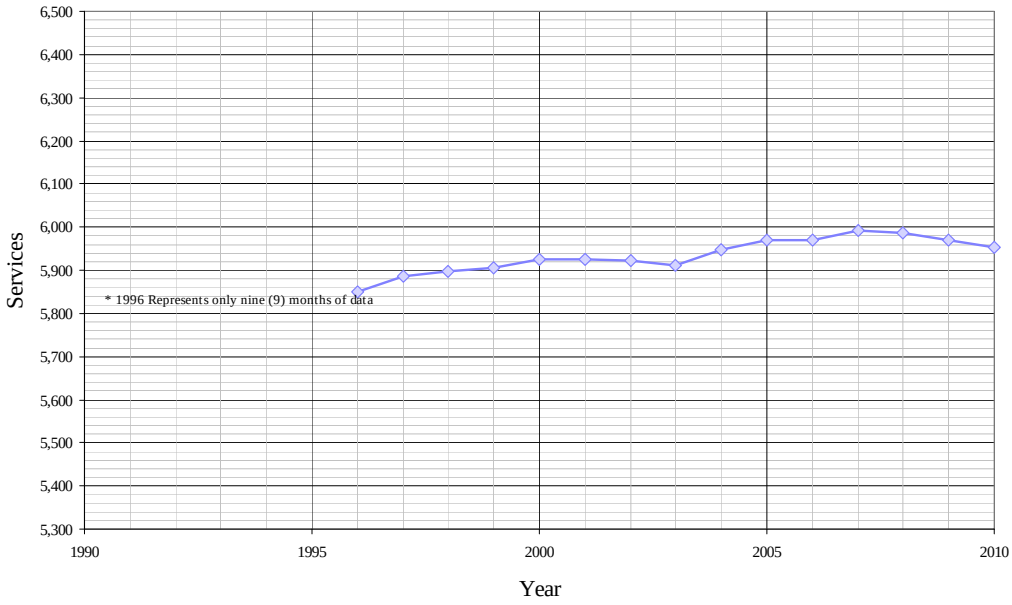
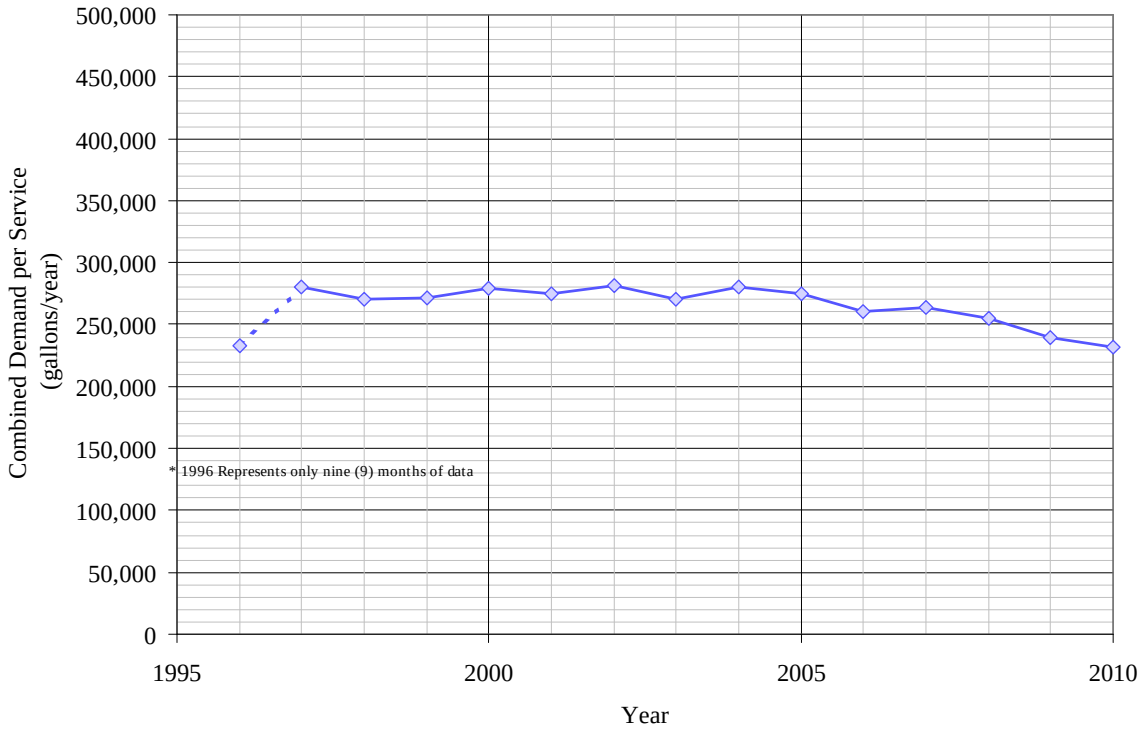


Figure 3.2-2: Historical Service Counts



From 1996 to 2005 the combined demand per service for all services remained fairly stable between 260,000-280,000 gallons per service, Figure 3.2-3. Since 2005 the demand per service has declined steadily and reached a low point in 2010 at 231,500 gallons per service. This reduction is largely the result of a response to the drought conditions in California from 2007-2009, in addition to the downturn in the economy. At this time it is not known whether these reductions will be permanent.

Figure 3.2-3: Combined Historical Demand per Service



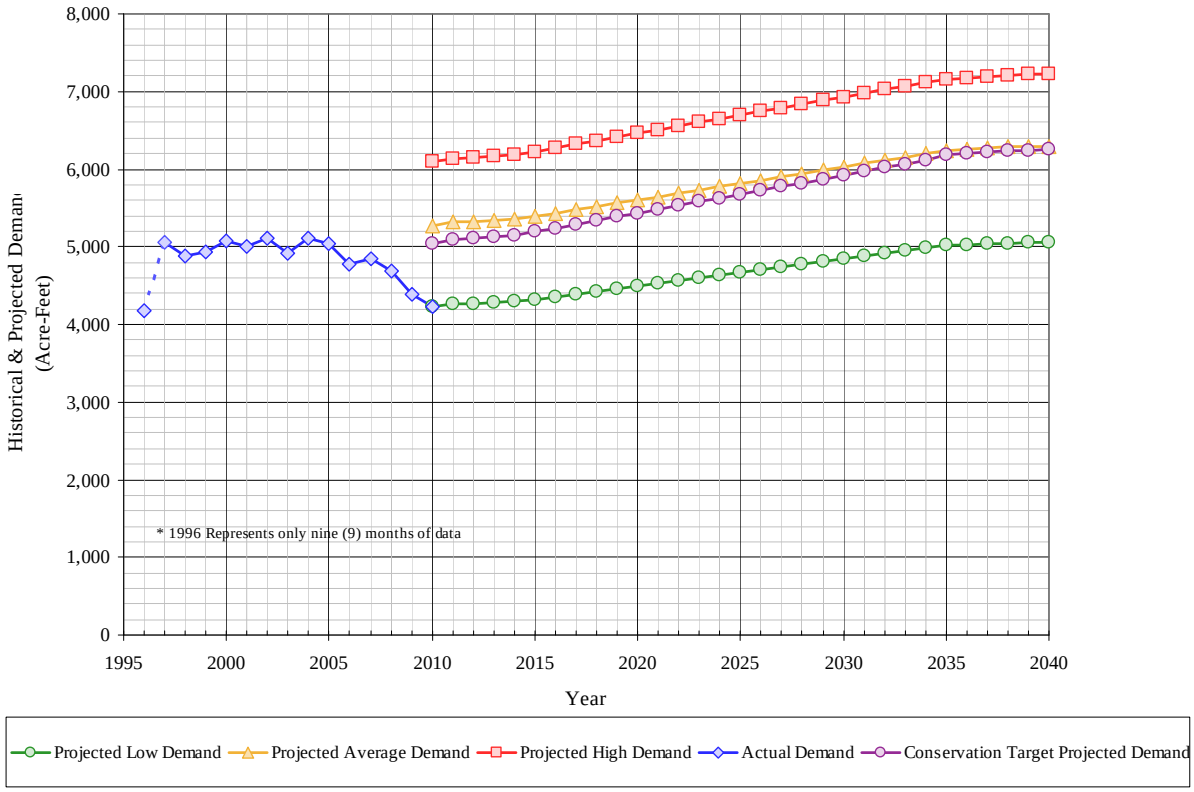
3.3 Water Demand Projections

Cal Water has historically made its water demand projections by first calculating individual growth rates for each of its service connection types. These growth rates were based on averages of service count data, and were extended over the planning horizon resulting in projected service counts. A set of three demand per service values (low, average, high), which were based on past customer usage records, were then applied to the projected service counts to calculate projected water demands for each service type. Due to the passage of Senate Bill 7 (SBx7-7) this method is no longer used as the primary method for calculating projected demands. However, these calculations are still used as the basis for calculating projected services, population, and the distribution of demand amongst service connection types.

The method used in this UWMP to determine future water demands is a response to SBx7-7 requirements. It results in two demand projections; the unadjusted baseline demand, and the target demand. The unadjusted baseline water demand projection is the total demand expected without any achieved conservation. It is equal to forecasted population multiplied by the base per capita water use, which is the 2005-09 average, or 97 gpcd.

The target water demand projection includes conservations savings due to both passive and active demand management. The target demand is calculated by multiplying SBx7-7 target gpcd values and projected population. Because water use in the Hawthorne District is already below both the interim and final SBx7-7 targets, per capita water use was held constant at 97 gpcd for this calculation. As a result, the unadjusted baseline demand is equal to the target demand. However, some savings is expected as s result of code and rate structure changes. These issues are discussed further in Section 6. the projected water demands are illustrated in Figure 3.3-1.

Figure 3.3-1: Historical & Projected Demand



The water demand projection calculation used for SBx7-7 compliance relies only on future population and gpcd target values. Projected water deliveries separated by customer type can not be determined by this method alone. To get a breakdown of future deliveries the ratio of individual deliveries for each class to the total amount that was developed for the previously used water demand projection was employed. This ratio was applied to the total adjusted baseline demand, which resulted in the projected deliveries listed in Tables 3.3-1 through 3.3-6.

Table 3.3-1: Actual 2005 Water Deliveries – AF (Table 3)					
	2005				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,534	2,250	-	-	2,250
Multi-family	781	1,626	-	-	1,626
Commercial	571	613	-	-	613
Industrial	0	0	-	-	0
Institutional/government	61	96	-	-	96
Landscape	-	-	-	-	-
Recycled*	19	120	-	-	120
Other	4	1	-	-	1
Total	5,970	4,706	0	0	4,706
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)					

Table 3.3-2: Actual 2010 Water Deliveries – AF (Table 4)					
	2010				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,511	1,951	-	-	1,951
Multi-family	779	1,340	-	-	1,340
Commercial	569	563	-	-	563
Industrial	2	10	-	-	10
Institutional/government	68	83	-	-	83
Landscape	-	-	-	-	-
Recycled*	21	84	-	-	84
Other	2	2	-	-	2
Total	5,952	4,032	0	0	4,032
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)					

Table 3.3-3: Projected 2015 Water Deliveries – AF (Table 5)					
	2015				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,640	2,487	-	-	2,487
Multi-family	799	1,763	-	-	1,763
Commercial	592	613	-	-	613
Industrial	3	-	-	-	-
Institutional/government	65	169	-	-	169
Landscape	-	-	-	-	-
Recycled*	19	-	-	-	-
Other	2	5	-	-	5
Total	6,120	5,036	-	-	5,036
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)					

Table 3.3-4: Projected 2020 Water Deliveries - AF (Table 6)					
	2020				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	4,830	2,605	-	-	2,605
Multi-family	832	1,847	-	-	1,847
Commercial	616	642	-	-	642
Industrial	4	-	-	-	-
Institutional/government	66	171	-	-	171
Landscape	-	-	-	-	-
Recycled*	19	-	-	-	-
Other	2	5	-	-	5
Total	6,369	5,270	-	-	5,270
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)					

Table 3.3-5: Projected 2025 and 2030 Water Deliveries - AF (Table 7)				
	2025		2030	
	Metered		Metered	
Water Use Sectors	# of accounts	Volume	# of accounts	Volume
Single family	5,021	2,724	5,211	2,845
Multi-family	865	1,931	897	2,017
Commercial	640	672	664	701
Industrial	6	-	8	-
Institutional/government	66	173	67	175
Landscape	-	-	-	-
Recycled*	19	-	20	-
Other	2	5	2	5
Total	6,619	5,505	6,869	5,743
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)				

Table 3.3-6: Projected 2035 and 2040 Water Deliveries - AF (Table 7)				
	2035		2040	
	Metered		Metered	
Water Use Sectors	# of accounts	Volume	# of accounts	Volume
Single family	5,402	2,972	5,453	3,010
Multi-family	930	2,107	939	2,134
Commercial	688	732	695	742
Industrial	9	-	9	-
Institutional/government	67	178	68	179
Landscape	-	-	-	-
Recycled*	20	-	20	-
Other	2	5	2	5
Total	7,119	5,993	7,185	6,069
*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)				

3.3.1 Senate Bill No. 7 Baselines and Targets

Senate Bill No. 7 (SBx7-7), which was signed into law in November 2009, amended the State Water Code to require a 20 percent reduction in urban per capita water use by December 31, 2020. Commonly known as the 20x2020 policy, the new requirements apply to every retail urban water supplier subject to the Urban Water Management Planning Act (UWMPA).

The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. SBx7-7 requires each urban retail water supplier to develop interim and 2020 urban water use targets in accordance with specific requirements. They will not be eligible for state water grants or loans unless they comply with those requirements.

The law provides each water utility several ways to calculate its interim 2015 and ultimate 2020 water reduction targets. In addition, water suppliers are permitted to form regional alliances and set regional targets for purposes of compliance. Under the regional compliance approach, water suppliers within the same hydrologic region can comply with SBx7-7 by either meeting their individual target or being part of a regional alliance that meets its regional target.

The following analysis presents the individual SBx7-7 compliance targets for the Hawthorne District. Under SBx7-7, an urban retail water supplier may adopt one of four different methods for determining the 2020 gpcd target:

1. Set the 2020 target to 80 percent of average GPCD for any continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

2. Set the 2020 target as the sum of the following:

    a. 55 GPCD for indoor residential water use.

    b. 90 percent of baseline CII water uses, where baseline CII GPCD equals the average for any contiguous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

    c. Estimated per capita landscape water use for landscape irrigated through residential and dedicated irrigation meters assuming water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Section 2.7 of Division 2 of Title 23 of the California Code of Regulations.

3. Set the 2020 target to 95 percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009).

4. Set the 2020 target using DWR's *provisional Method 4 Target Calculator*.

Under Method 1, the 2015 and 2020 targets are set to 90 percent and 80 percent of baseline water use, respectively. Baseline water use is the average water use for any continuous 10-year period ending between 2004 and 2010. For the Hawthorne District, the 10-year base period 1997-2006 yielded the maximum target under this method. The 2015 target is 88 gpcd and a 2020 target is 78 gpcd. Table 3.3-7 summarizes the base period ranges and Table 3.3-8 lists the per capita demand over the ten-year base period.

Table 3.3-7: Base Period Ranges (Table 13)

Base	Parameter	Value	Units
10-15-year base period	2008 total water deliveries	4,495	AF
	2008 total volume of delivered recycled water	93	AF
	2008 recycled water use as a percent of total deliveries	2.1	%
	Number of years in base period	10	years
	Year beginning base period range	1997	
	Year ending base period range	2006	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range	2007	

Table 3.3-8: Daily Base Per Capita Water Use-10-Year Range (Table 14)

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	1997	43,065	4.4	103
Year 2	1998	42,980	4.3	100
Year 3	1999	42,957	4.3	101
Year 4	2000	43,088	4.4	103
Year 5	2001	46,217	4.4	95
Year 6	2002	46,175	4.5	97
Year 7	2003	45,147	4.3	95
Year 8	2004	46,175	4.5	97
Year 9	2005	46,190	4.4	95
Year 10	2006	46,174	4.2	90
			Base Daily Per Capita Water Use	97

Under Method 3, the 2015 and 2020 targets are set to 95 percent of the 2015 and 2020 targets for the hydrologic region in which the district is located. Because the Hawthorne District is located in the South Coast hydrologic region the Hawthorne District's 2015 target is 157 gpcd and the 2020 target is 142 gpcd.

Under the provisional Method 4, the 2020 target is calculated using DWR's *Provisional Method 4 Target Calculator*. Hawthorne District's 2020 target under provisional Method 4 is 78 gpcd. The 2015 target is equal to the mid-point between the 10-year base daily per capita water use and the 2020 target. This is equal to 88 gpcd.

The SBx7-7 target for 2020 cannot exceed 95 percent of the District's five-year baseline water use, where the baseline period ends no earlier than December 31, 2007 and no later than December 31, 2010. The District's 2020 target cannot exceed this level, regardless of which method is used to calculate it. Because Hawthorne's base daily per capita water use in both periods is less than 100 gpcd, the requirement that that the 2020 target cannot exceed 95% of the 5-year base daily per capita water use does not apply.

Table 3.3-9: Daily Base Per Capita Water Use-5-Year Range (Table 15)

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	45,147	4.3	95
Year 2	2004	46,175	4.5	97
Year 3	2005	46,190	4.4	95
Year 4	2006	46,174	4.2	90
Year 5	2007	46,199	4.2	92
			Base Daily Per Capita Water Use	94

Based on the results of this analysis as shown in Table 3.3-12, the Method 3 targets were chosen for the Hawthorne District. Average per capita demand, net of recycled water use, for the previous five years is already below the 2015 and 2020 targets. Thus, if per capita demand stays near this average, the district will meet its 2020 per capita water use target.

Table 3.3-10. Hawthorne District SBx7-7 Targets

Maximum Allowable Target	
Base Period:	2003-2007
Per Capita Water Use:	94
Maximum Allowable 2020 Target:	N/A
Method 1: 80% of Baseline Per Capita Daily Water Use	
Base Period:	1997-2006
Per Capita Water Use:	97
2015 Target:	88
2020 Target:	78

Method 3: 95% of Hydrologic Region Target	
Hydrologic Region:	South Coast
2015 Target:	157
2020 Target:	142
Method 4: DWR's Provisional Method 4 Target Calculator	
2015 Target:	88
2020 Target:	78
Selected District Target	
2015 Target:	157
2020 Target:	142

3.3.2 Low Income Housing Projected Demands

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the Urban Water Management Planning Act require water providers to develop water demand projections for lower income single and multi-family households.

Cal Water does not maintain records of the income level of its customers and does not discriminate in terms of supplying water to any development. Cal Water is required to serve any development that occurs within its service area, regardless of the targeted income level of the future residents. It is ultimately the City's or County's responsibility to approve or not approve developments within the service area.

According to data provided by the City of Hawthorne, 66 percent of households fall below 80 percent of the median income category. As a result, the water demands listed in Table 3.3-11 represent 66 percent of the projected residential water demands in Hawthorne.

Table 3.3-11: Low-income Projected Water Demands (Table 8)

Low Income Water Demands	2015	2020	2025	2030	2035	2040
Single-family residential	1,462	1,532	1,602	1,673	1,747	1,770
Multi-family residential	1,036	1,086	1,136	1,186	1,239	1,255
Total	2,499	2,618	2,738	2,859	2,986	3,024

3.4 Total Water Use

The Hawthorne District does not currently sell water to other agencies, nor does it provide water for saline barriers, groundwater recharge, conjunctive use, or recycling. The potential additional water uses within the service area are discussed and quantified in Section 4. For the purposes of this UWMP it is assumed that the only water sales to customers and distribution system losses are included in the total demand. The recycled water sales and system losses are summarized in Table 3.4-1.

Table 3.4-1: Additional Water Uses and Losses - AFY (Table 9 and 10)

Water Use	2010 Actual	2015	2020	2025	2030	2035	2040
Sales to Other Agencies	-	-	-	-	-	-	-
Saline barriers	-	-	-	-	-	-	-
Groundwater recharge	-	-	-	-	-	-	-
Conjunctive use	-	-	-	-	-	-	-
Raw water	-	-	-	-	-	-	-
Recycled	84	100	101	101	102	103	103
Unaccounted-for system losses	197	156	163	171	178	186	188
Total	281	256	264	272	280	289	292

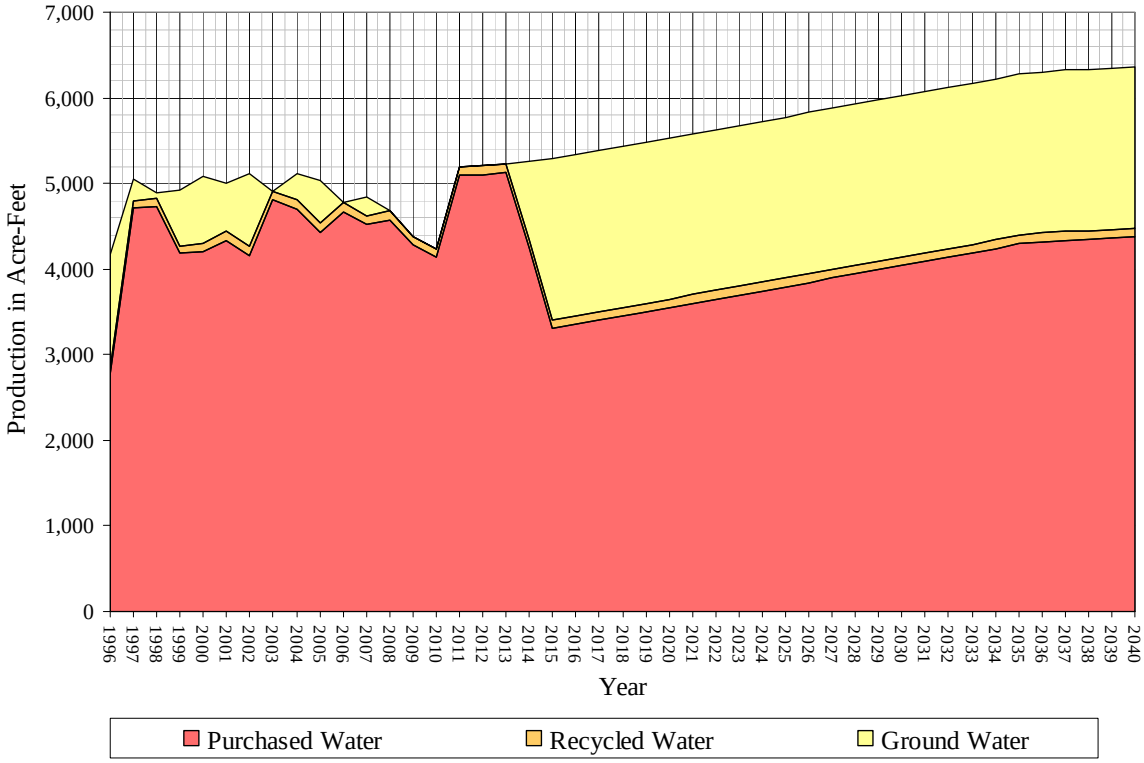
Actual and projected water use through 2040 is shown in Table 3.4-2. The values represent the total target demand projection based on SBx7-7 gpcd targets, including unaccounted for water.

Table 3.4-2: Total Water Use – Actual and Projected AFY (Table 11)

	2005 (Actual)	2010 (Actual)	2015	2020	2025	2030	2035	2040
Water Use	5,154	4,314	5,292	5,534	5,777	6,023	6,282	6,361

Figure 3.4-1 shows the planned sources of supply based on these demands through 2040. At this time only groundwater and conservation are included as sources of supply. Cal Water's efforts to secure alternative supplies are discussed in the following section.

Figure 3.4-1: Historical & Projected Sources



The projected demand to be supplied by WBMWD is shown in Table 3.4-3. Purchased water amounts were calculated by subtracting the projected groundwater pumping and recycled water demand from the SBx7-7 target demand.

Table 3.4-3: Demand projections provided to wholesale suppliers – AFY (Table 12)

Wholesaler	2010	2015	2020	2025	2030	2035	2040
West Basin Municipal Water District-Imported	4,146	3,310	3,551	3,794	4,039	4,297	4,376
West Basin Municipal Water District-Recycled	84	100	101	101	102	103	103
Total Supply	4,230	3,410	3,652	3,895	4,141	4,400	4,478

4 System Supplies

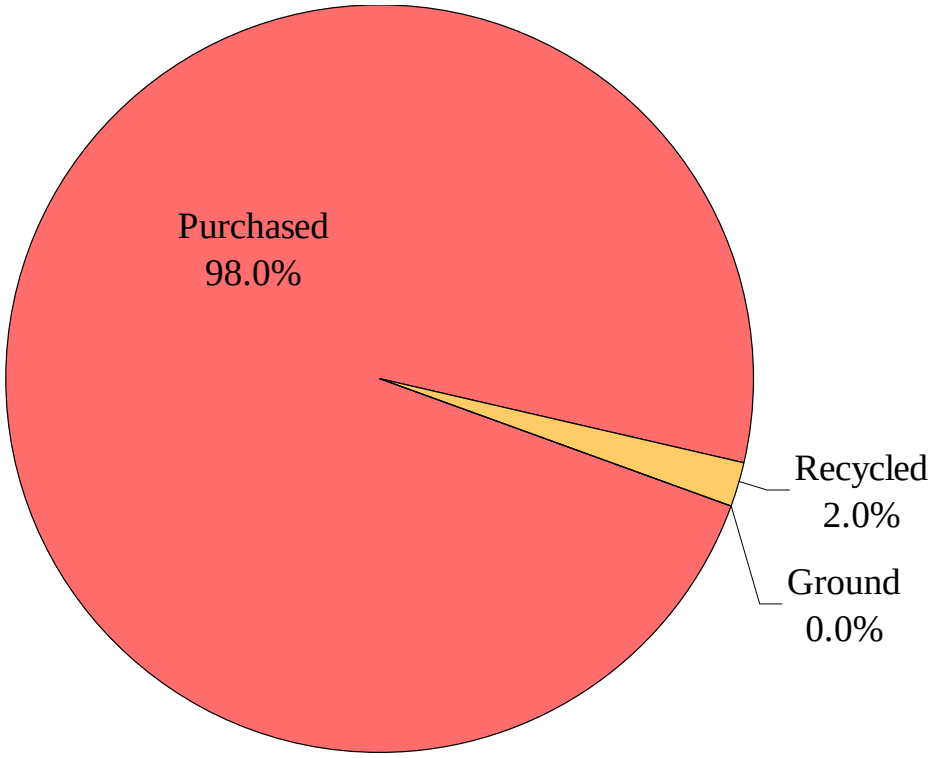
4.1 Water Sources

The water supply served to the customers of the Hawthorne District is a combination of the following sources:

- Groundwater pumped from an adjudicated groundwater basin - the West Coast Basin. Groundwater is extracted from the basin using four wells.
- Imported water purchased from Metropolitan Water District of Southern California through the West Basin Municipal Water District (WBMWD).
- Recycled wastewater produced by the West Basin Municipal Water District in their West Basin Water Recycling Plant located in El Segundo.

Groundwater has historically supplied approximately 10 percent of the total annual demand. Purchased water from WBMWD satisfied 87.5 of the District's water demand, and recycled water 2.5 percent. More recently purchased water has contributed approximately 98 percent of total demand with recycled water making up the remaining amount. WBMWD serves as the regional wholesaler and developer of local supplies. The distribution of water sources is shown in Figure 4.1-1.

Figure 4.1-1: Water Sources (2010)



The projected water supply source and volumes are summarized in Table 4.1-1.

Table 4.1-1: Planned Water Supplies (Table 16)
(AFY)

Water Supply Sources	2010 Actual	2015	2020	2025	2030	2035	2040
West Basin Municipal Water District	4,146	3,310	3,551	3,794	4,039	4,297	4,376
Groundwater Wells	0	1,882	1,882	1,882	1,882	1,882	1,882
Transfers in or out	-	-	-	-	-	-	-
Exchanges In or out	-	-	-	-	-	-	-
Recycled Water (projected use)	84	100	101	101	102	103	103
Desalination	-	-	-	-	-	-	-
Total	**4,230**	**5,292**	**5,534**	**5,777**	**6,023**	**6,282**	**6,360**

4.2 Imported Water

The majority of water furnished to customers in the Hawthorne District is purchased water. The Metropolitan Water District of Southern California (MWDSC) imports the water used in the Hawthorne District into Southern California. The source of the water is from the Colorado River Aqueduct, which is owned by MWDSC, or through the California Aqueduct, a facility of the State Water Project, which is owned and operated by the California Department of Water Resources.

The purchase of this water is made through the West Basin Municipal Water District (WBMWD), one of the twenty-seven member agencies of MWDSC. The WBMWD serves as the regional water wholesaling agency and developer of local supplies. The delivery of imported water is made through two WBMWD service connections that transfer water from the MWDSC distribution feeder network to the District's distribution system. The total rated capacity of the two service connections is 13,600 gpm (19.6 mgd). These two connections are located on two MWDSC distribution system feeders: the Inglewood Feeder and the West Coast Feeder. The Sepulveda feeder also serves the region, but does not have a direct connect with the Hawthorne District.

In the Imported Water Purchase agreement for Cal Water with the WBMWD, the Base, Tier Allocations, and Purchase Commitment are established as a combined allocation to all four Cal Water Districts. Under this, the Hawthorne District shares in the combined allocations with the three other Cal Water districts The agreement was initially adopted to be effective on January 1, 2003; a later amendment became effective January 1, 2008. The amended agreement adjusted Cal Water's Tier 1 Annual Maximum to 70,000 acre-feet and the Purchase Commitment to 210,000 acre-feet. Cal Water has developed an allocation that distributes the Tier 1 Annual Maximum to each of its four districts, so that if the total Tier 1 Maximum is exceeded the applicable Tier 2 charges can be assessed to

the appropriate district. The allocations are as follows: Dominguez 22,400 AF, Hawthorne 4,900 AF, Hermosa-Redondo 16,800 AF, and Palos Verdes 25,900.

4.3 Surface Water

Cal Water does not have any surface water collection facilities within the Hawthorne District. Surface water is ultimately the source for the imported water, which is transported through the Colorado River Aqueduct system and from Northern California.

4.4 Groundwater

In 1961 the West Coast Basin was adjudicated, and the Department of Water Resources was retained as Watermaster. Each month individual well users report their extractions to the Watermaster, which allows the Watermaster to regulate water rights in the sub-basin[5]. The adjudication order is attached in Appendix H.

The West Coast basin is a pressurized aquifer groundwater basin with three primary aquifers: the 200-foot Sands, the Silverado Aquifer, and the Lower San Pedro Aquifer. These aquifers have continuity with the Pacific Ocean in Santa Monica Bay. Overdraft of the basin was caused by excessive pumping due to population growth and rapid industrialization of the Los Angeles Coastal Plain beginning in the 1930s. This overdraft caused lowering of the piezometric head of the aquifers, which increased pumping costs and resulted in seawater intrusion. The adjudication of the West Coast Basin began in 1945 when California Water Service Company along with the City of Torrance and the Hawthorne Water Company filed a lawsuit in Superior Court, Los Angeles County, to quiet title to the groundwater rights and control pumping in the basin. As part of the effort to resolve the overdraft condition, the West Basin Municipal Water District was formed in 1947 to distribute supplemental water to the major water purveyors imported into the region by the Metropolitan Water District of Southern California. In 1955 when pumpers realized the severity of the overdraft, groundwater pumping was limited under an interim agreement. In 1961, the Court rescinded the interim agreement and signed the West Coast Basin Judgment.

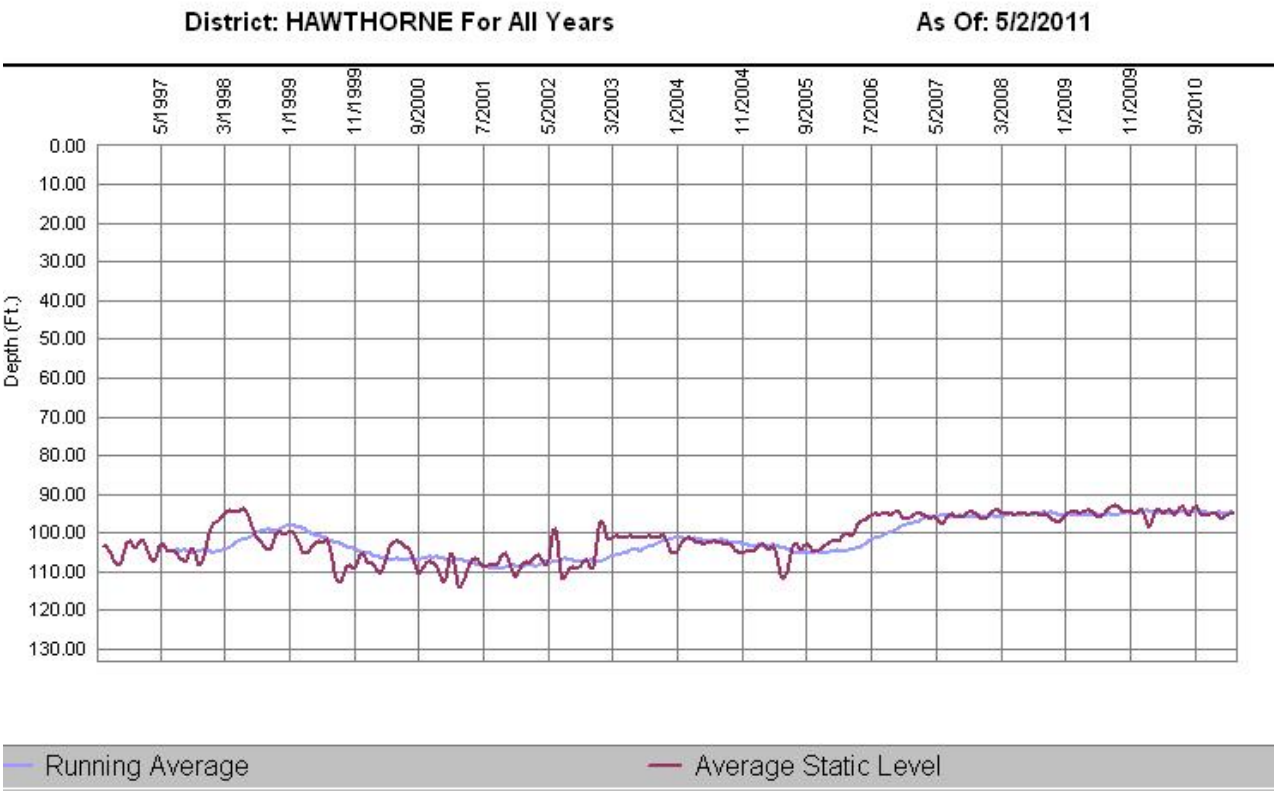
The City of Hawthorne leased the management of its municipal water system and has transferred the water right of 1,882 AF/Y to Cal Water. The Hawthorne District contains four wells with a total design capacity of 5,600 GPM. If operated at a ninety percent daily runtime, the annual pumping capacity would be 5,040 GPM or 8,130 AF/Y. This potential production is much greater than the adjudicated right of the District; however, the well water has high mineral content along with dissolved volatile organic compounds (VOC) which has impaired the water treatment plant. The wells are used only sparingly due to these water quality concerns.

[5] Watermaster Service In The West Coast Basin Los Angeles County, State Of California, Department Of Water Resources, September 2004

An upgrade to the water treatment facility is planned over the next several years. Once the upgrades have been made groundwater will make up a larger portion of the total water supply in the Hawthorne District. For the purposes of this UWMP it was assumed that the full APA would begin to be produced by 2015.

Figure 3.3-1 shows the average groundwater level for the District has remained within a depth of 100 to 110 feet since 1997. More recently the water level has risen as the wells have been used less.

Figure 4.4-1: District Average Well Level



The historical volume of the groundwater pumped is shown in Table 4.4-1 and the projected volume is presented in Table 4.4-2.

Table 4.4-1: Amount of Groundwater Pumped – AFY (Table 18)					
Basin Name	**2006**	**2007**	**2008**	**2009**	**2010**
West Coast Basin	0	224	8	0	0
% of Total Water Supply	0%	5%	0%	0%	0%

Table 4.4-2: Amount of Groundwater projected to be pumped – AFY (Table 19)						
Basin Name	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**
West Coast Basin	1,882	1,882	1,882	1,882	1,882	1,882
% of Total Water Supply	36%	34%	33%	31%	30%	30%

4.4.1 Basin Boundaries and Hydrology

The West Coast Subbasin is bounded on the north by the Ballona Escarpment, an abandoned erosional channel from the Los Angeles River. On the east it is bounded by the Newport-Inglewood fault zone and on the south and west by the Pacific Ocean and consolidated rocks of the Palos Verdes Hills. The surface of the sub-basin is crossed in the south by the Los Angeles River through the Dominguez Gap, and the San Gabriel River through the Alamitos Gap, both of which then flow into San Pedro Bay.

A detailed description of the basin is given in DWR's - California's Groundwater Bulletin 118, see Appendix D[6].

4.4.2 Groundwater Management Plan

As the regional groundwater management agency for two of the most utilized groundwater basins in the state of California, the WRD plays an integral role in overall water resource management in southern Los Angeles County. The WRD manages groundwater for nearly four million residents in 43 cities of southern Los Angeles County. The 420 square mile service area uses about 250,000 acre-feet of groundwater per year, which equates to nearly 40 percent of the total demand for water. The WRD ensures that a reliable supply of high quality groundwater is available through its clean water projects, water supply programs, and effective management principles. A copy of the 2003 WRD Strategic Plan is included as Appendix I.

4.4.3 Desalted Brackish Groundwater

Seawater intrusion has been a problem in the West Coast Basin since the 1930s. Two seawater intrusion barriers, the West Coast Basin Barrier and the Dominguez Gap Barrier, have addressed the threat of losing the basin to salt water. The Los Angeles County Department of Public Works operates both barriers and the Water Replenishment District buys the water used in these facilities from WBMWD. Seawater intrusion has been effectively halted at the barrier alignment; however, a large body of brackish water still lies inland of the barrier. This saline plume is a result of seawater intrusion that occurred prior to operation of the barrier and is being addressed through desalination using reverse osmosis facilities at the C. Marvin Brewer Desalter, a demonstration project started in July of 1993. Dominguez Water Corporation, with the support of the WBMWD, the Water Replenishment District of Southern California, Metropolitan Water District of Southern California, and the United States Bureau of Reclamation, established the C. Marvin Brewer Desalter. The goal was to demonstrate that this plume could be

[6] California's Ground Water Bulletin 118, 2003:
a. South Coast Hydrologic Region,
b. Coastal Plain of Los Angeles Groundwater Basin, West Coast Subbasin

extracted, treated, and put to beneficial use in an economical manner. Cost data on the project indicates that the average monthly expenditure per acre-foot of potable water produced is $660. That cost is further reduced through an incentive program offered by MWD, known as the Local Projects Program, so that the unit cost to the customer is slightly less than non-interruptible imported service from MWD.

4.5 Recycled Water

The recycling of wastewater offers several potential benefits to City of Hawthorne and its customers. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape, irrigation) now being served by potable water. The potential amount of recycled water that can be produced is proportional to the amount of wastewater that is generated by the District, and is discussed in the following sections.

The Hawthorne service area currently receives recycled water from the regional wholesale water supply agency, WBMWD. WBMWD acquires, controls, distributes, and sells recycled water to several cities and agencies in the greater Los Angeles area.

WBMWD has constructed what will ultimately be one of the largest water reuse projects in the United States. In the Phase I User Report, HYA Consulting Engineers identified over 105 economically feasible recycled water users with a combined estimated average annual demand of 19,100 AF. The project, when fully constructed, has the potential to deliver nearly 70,000 AF of tertiary treated recycled water per year. Following treatment at the Hyperion Water Treatment Plant owned by the city of Los Angeles and located near the Los Angeles airport, recycled water is being used for injection at the seawater intrusion barriers, for industrial operations and for landscape irrigation. Since 1995 the injection of recycled into the West Coast Basin Barrier has totaled over 95,000 AF.

4.5.1 Wastewater Collection

The Los Angeles County Sanitation District (LACSD) owns, operates, and maintains the sewer system consisting of gravity sewers, pumping stations, and force mains to collect wastewater in the Hermosa and Redondo Beach service area. The collected wastewater is discharged to trunk sewers and interceptors owned and operated by the LACSD. The wastewater is conveyed to the LACSD's Joint Water Pollution Control Plant in Carson, where it receives secondary treatment prior to discharge in an ocean outfall. Although this plant does not currently produce recycled water, it is being considered as a potential source of recycled water in the future.

4.5.2 Estimated Wastewater Generated

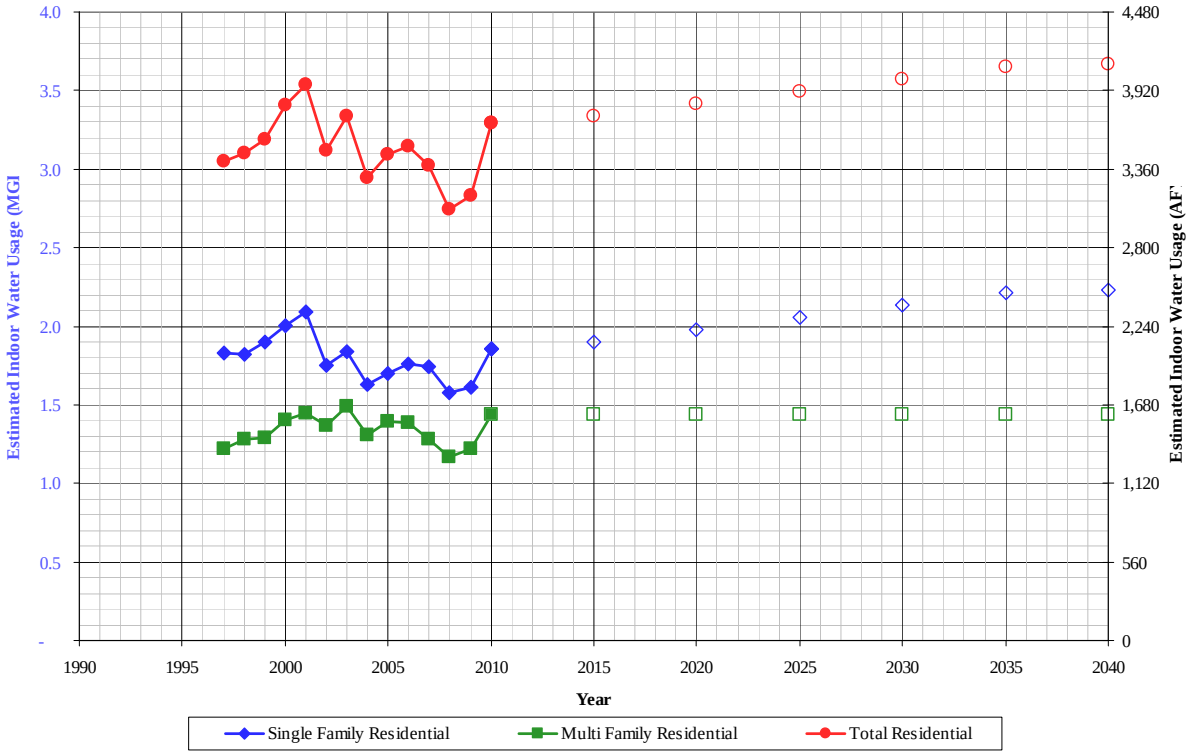
Municipal wastewater is generated in the Hawthorne service area by a combination of residential, commercial, and industrial sources. The quantity of wastewater generated is proportional to the population and the water use in the service area. Estimates of the wastewater flows for the future conditions are presented in Table 4.5-1. The estimates

were obtained by annualizing 90 percent of January water use in the Cal Water's service area. The historical data from 1997 to the present is shown in Figure 4.5-1 with a linear projection of the data shown to the year 2040.

The historical data from 1980 to the present is shown in Figure 4.5-1 with a linear projection of the data shown to the year 2040.

Table 4.5-1: Recycled Water-- Wastewater Collected and Treated-AFY (Table 21)								
Type of Wastewater	**Treatment Level**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**
Total Collected and Treated	Secondary	3,690	3,740	3,828	3,915	4,002	4,090	4,113

Figure 4.5-1: Estimated District Annual Wastewater Generated



Because the wastewater generated in Cal Water's service area is received by a plant that does not produce recycled water, it is assumed that all of the collected wastewater is disposed.

Table 4.5-2: Disposal of wastewater (non-recycled) AFY (Table 22)								
Method of Disposal	**Treatment Level**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**
Ocean outfall	Secondary Treatment	3,690	3,740	3,828	3,915	4,002	4,090	4,113

As discussed in the following section, the recycled water used in the Hawthorne District is collected from communities outside of the District.

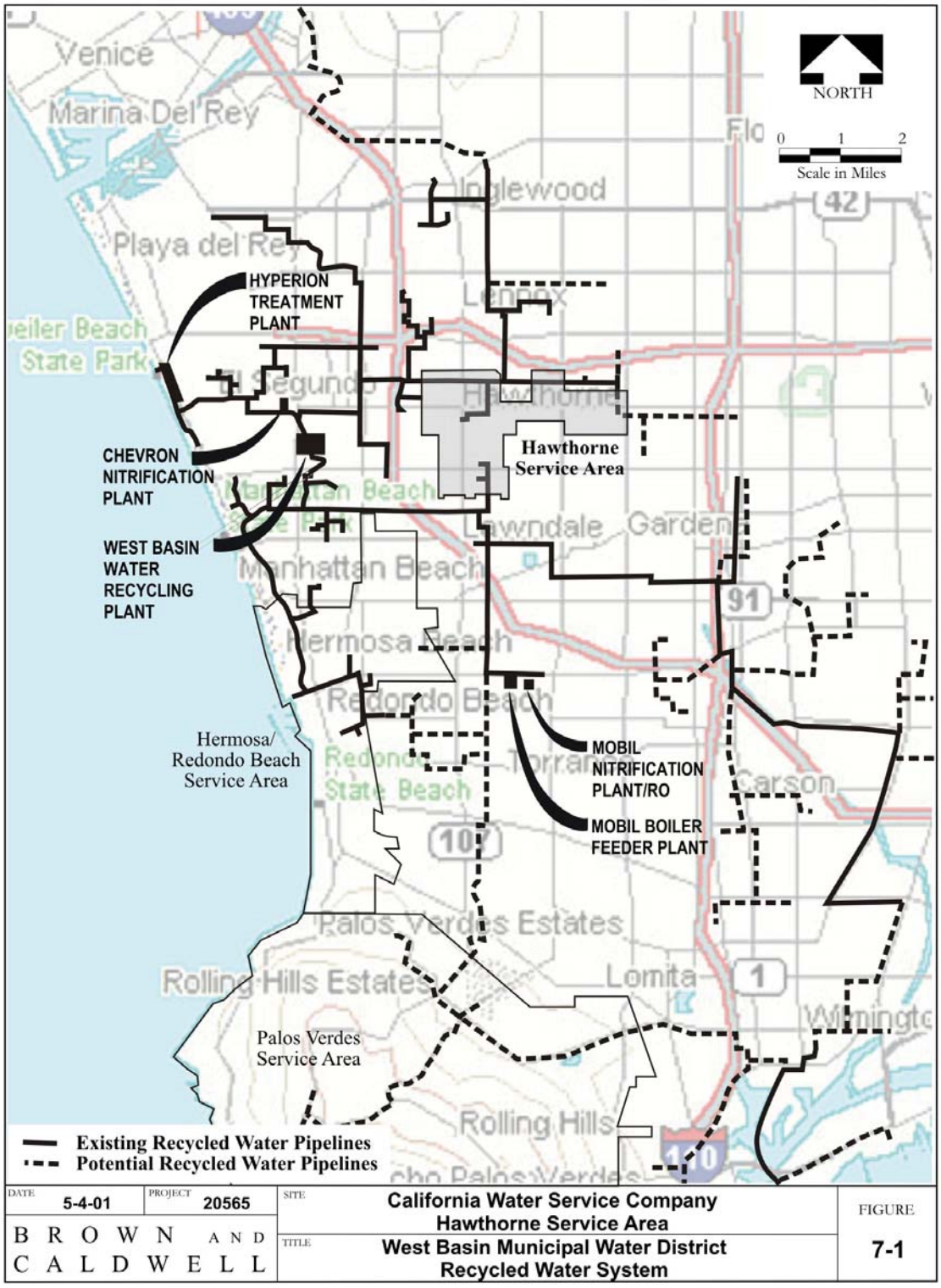
4.5.3 Wastewater Treatment and Recycling

Although the LACSD's Joint Water Pollution Control Plant provides the wastewater service for the Hawthorne service area, recycled water is provided to the Hawthorne service area by the West Basin Water Recycling Facility (WBWRF). The source of this recycled water is treated effluent from the City of Los Angeles' Hyperion Wastewater Treatment Plant. The Hyperion Wastewater Treatment Plant provides secondary treatment using the activated sludge process. Most of the treated effluent is disposed of through an ocean outfall, but approximately 6 percent of the treated effluent is sent to the West Basin Water Recycling Facility in El Segundo where it undergoes chemical clarification, recarbonation, microfiltration, and chlorination. The WBWRF produces about 37.5 mgd of recycled water and has an ultimate capacity of 60 mgd.

As discussed in the following section, the recycled water used in the Hawthorne District is collected from communities outside of the District. Recycled water from the WBWRF is used for several purposes including: 1) groundwater replenishment through more than 100 wells, 2) landscape irrigation and 3) industrial process water. The WBWRF serves more than 140 sites including areas in Manhattan Beach, Torrance, Hermosa Beach, and Inglewood. The biggest customers are the Chevron and Mobil oil refineries. In the Hawthorne service area, the recycled water customers include the City of Hawthorne and Hawthorne School District.

The Joint Water Pollution Control Plant is the largest of the LACSD's wastewater treatment plants. It provides advanced primary and partial secondary treatment for 350 million gallons of wastewater per day and serves a population of approximately 3.5 million people. The treated wastewater is disinfected with chlorine and sent to the Pacific Ocean through a network of outfalls that extends two miles off the Palos Verdes Peninsula to a depth of 200 feet. The main features of the piping system for distributing the recycled wastewater in the Hawthorne service area are shown on Figure 4.5-2.

Figure 4.5-2: Recycled Water System[7]



[7] Kennedy/Jenks Consultants. 2000. WBMWD Water Recycling Program Master Plan. April 25, 2000.

4.5.4 Potential Water Recycling

The 2000 WBMWD Water Recycling Program identified potential customers in Cal Water's Hawthorne service area. Commercial and industrial customers are currently utilizing recycled water and are projected to remain steady for the future. Table 4.5-3 summarizes the projected recycled water supply in Cal Water's Hawthorne service area through the year 2040.

Table 4.5-3: Projected Recycled Water Supply for Hawthorne (AFY) (Table 23)

User type	Treatment Level	2010	2015	2020	2025	2030	2035	2040
Combined Landscape / Industrial Users	Chemical clarification, recarbonation, micro filtration, and chlorination.	84	100	101	101	102	103	103
	Total	84	100	101	101	102	103	103

WBMWD is responsible for:

- Determining the technical and economic feasibility of supplying recycled water to the Hawthorne service area
- Encouraging the use of and optimizing the use of recycled water in the Hawthorne service area
- Extension of recycled water lines within the Hawthorne service area

Cal Water encourages the use of recycled water by offering the recycled water at a reduced cost. Additional recycled water customers are expected to be added over time as the distribution system grows and the price difference between recycled and potable water grows.

4.6 Desalinated Water

The Hawthorne District's location nearby the coast makes it a good candidate for the use of desalinated water, if it was warranted. A desalination facility could be located in a neighboring water system and could be used to supplement Hawthorne's supply. Desalination would provide an increase in reliability of overall supplies in the area. The City of Hawthorne has no current plan to develop this source.

In June 2005, West Basin was awarded approximately $1.7 million for its desalination program by the California Department of Water Resources under Proposition 50. The

goal of West Basin's Temporary Ocean-Water Desalination Demonstration Project is to conduct research and develop data for the permitting, design, construction, and operation of West Basin's proposed full-scale desalination facility. In contrast to the Pilot Project, West Basin's Demonstration Facility will utilize limited quantities of full-scale equipment to refine operating parameters, perform additional water quality testing, evaluate source intake methodologies, and assess energy efficiency. West Basin's temporary Demonstration project will be constructed in, and adjacent to, an existing pump house at the L.A. Conservation Corps' SEA Lab facility in Redondo Beach.

If the Pilot Project is successful and West Basin proceeds to build a large scale desalination plant in this location, Cal Water will have access to this alternative supply.

4.7 Transfer or Exchange Opportunities

The City of Hawthorne is not pursuing water transfers or exchanges at this time with other agencies. However, during water rationing periods, or emergency conditions, it may consider water transfer entitlements and or banked water from neighboring agencies. The City of Hawthorne will mainly rely on WBMWD to develop adequate supplies to meet customer demand.

The City of Hawthorne has an annual adjudicated pumping right of 1,882 AF. The City of Hawthorne could consider leasing or selling these groundwater rights to other pumpers in the basin.

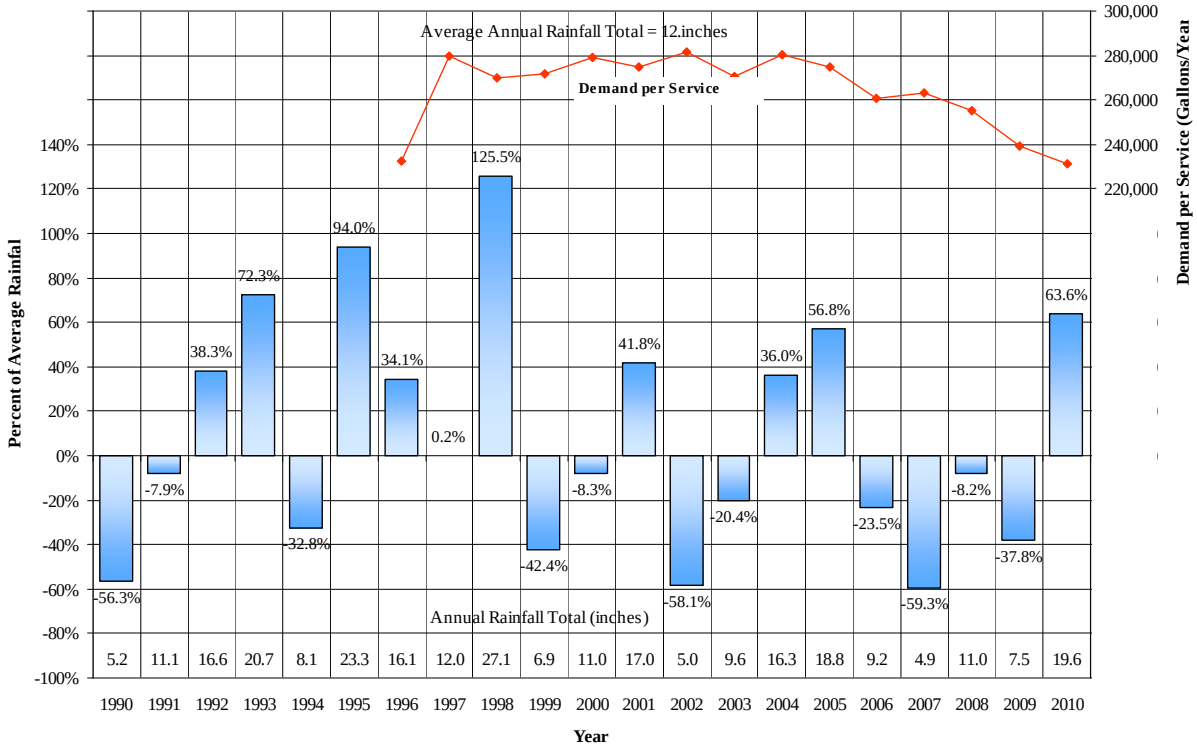
5 Water Supply Reliability and Water Shortage Contingency Planning

5.1 Water Supply Reliability

The water supply for the Hawthorne District is ultimately reliant on annual precipitation in the watersheds of the Feather and Colorado Rivers that supply the main aqueducts in Southern California. Local weather has less of an effect on annual supplies. However, it has a large impact on customer demands.

A chart comparing annual rainfall since 1990 to the historic average is shown in Figure 5.1-1. It also displays the demand per service values for each year since 1996. Water use usually increases in the first years of a drought. Afterwards, conservation efforts are increased and the demand per service decreases accordingly. The statewide drought of 1987-1992 is a good example of these trends. Water use has been declining steadily and has recently declined further in response to the drought conditions from 2007-2009.

Figure 5.1-1: Comparison of Annual Rainfall to Historic Average



5.2 Drought Planning

The most recent driest year occurred in 2002 when the rainfall was 58 percent below average (5.0 inches). This is taken as the single dry year shown in the following table. The multiple dry years used in the following table are based on the most recent and consecutive lowest annual rainfall totals which occurred from 2006 to 2009. The normal year is taken as 1997, when the annual rainfall was approximately equal to the average rainfall totals. The base years are summarized in Table 5.2-1.

Table 5.2-1: Basis of Water Year Data (Table 27)

Water Year Type	Base Year (s)
Average Water Year	1997
Single-Dry Water Year	2002
Multiple-Dry Water Years	2006-2009

Cal Water is not a regional water wholesaler and does not store water seasonally in reservoirs or other storage facilities. Therefore total runoff figures can not be used to determine supply reliability. Perhaps a better indication of annual variability would be the variation in customer demand between normal and single dry or multiple dry years. This can be seen in the overall average demand per service values for the District, as shown in Table 5.2-2. The data suggests a typical pattern where demand increases at the beginning of the drought and is gradually reduced as dry conditions persist. This reduction generally happens as a result of increased conservation requests by water providers and a general awareness of the problem by customers.

Table 5.2-2 shows the water supplies used in the normal, single dry, and multiple dry years described above. As a result of dry conditions and decreased storage, in 2008 MWD entered into Stage 2 of its Water Supply Allocation Plan, resulting in approximately 10 percent reduction in imported water allocations. Cal Water customers responded by reducing demand to meet these allocation targets. For the reasons described above, demand totals have been substituted for supply amounts in this analysis. If customers were not able to meet the reduction target, demand would increase, and penalty rates could be applied to these additional Cal Water purchases.

Table 5.2-2: Supply Reliability – gal/service/yr (Table 28)

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
279,867	281,588	261,016	263,416	254,992	239,349
% of Normal	101%	93%	94%	91%	86%

The supply reliability analysis reflects the assertion that the combination of the safe yield of groundwater in conjunction with MWD's available drought year supplies will be sufficient to provide the normal allotment of water to Cal Water's Dominguez District even in times of prolonged drought. For this analysis it is assumed that the current agreement for purchased water with WBMWD will be renewed and that normal amounts of recycled water will be available in all years.

Table 5.2-3 shows an estimate of the minimum water supply for the next three years. In this case 2010 was assumed to be a normal year and the supply for 2011-2013 will be reduced by the percentages listed in Table 5.2-2 for the multiple dry years. Groundwater and recycled water are drought proof supplies and will be available in their normal amounts in all years. The groundwater quantities shown in the table reflect Cal Water's expected pumping capacity in these years. Cal Water intends to increase well capacity until the full adjudicated right can be utilized on an annual basis. The recycled water quantities shown are the expected demands from this source. Imported water will be used to make up the remaining supply and will vary according to customer demand.

Table 5.2-3: Supply Reliability – Current Water Sources - AFY (Table 31)

Water Supply Source	Average / Normal Water Year Water Supply (2010)	Multiple Dry Water Year Water Supply		
		2011	2012	2013
Purchased	4,960	4,649	4,703	4,568
Recycled	84	100	100	100
Groundwater	0	0	0	0
Total	5,044	4,748	4,803	4,668
% of Normal Year	100%	94%	95%	93%

5.2.1 Normal-Year Comparison

Water supply and demand patterns change during normal, single dry, and multi dry years. To analyze these changes, Cal Water relies on historical usage to document expected changes in future usage in water demand; such as, assuming increasing demand due to increased irrigation needs or a decrease in demand due to awareness of drought conditions.

The groundwater supply is available in all hydrologic year types and is limited to the City of Hawthorne's APA. Cal Water intends to maximize this source by 2015 by increasing by upgrading the treatment facility. The recycled supply shown in Table 5.2-4 is the expected demand from this source and will be available in all hydrologic years.

The remaining supply will come from purchased water, which will vary depending on customer demand. The combined projected purchased water for all four of Cal Water's

districts receiving water from WBMWD will be below the Tier I maximum of 70,000 AFY in normal hydrologic years.

According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in normal hydrologic years to meet all projected demands. For this analysis the normal demand is considered equal to the SBx7-7 target water demand projection plus recycled water use. Table 5.2-4 indicates that supplies will be reliable throughout the planning horizon of this UWMP and that no supply deficiencies are expected.

Table 5.2-4: Supply and Demand Comparison - Normal Year - AF (Table 32)

	2015	2020	2025	2030	2035	2040
Purchased water	3,310	3,551	3,794	4,039	4,297	4,377
Groundwater	1,882	1,882	1,882	1,882	1,882	1,882
Recycled water	100	101	101	102	103	103
Supply totals	5,292	5,534	5,777	6,023	6,282	6,361
Demand totals	5,292	5,534	5,777	6,023	6,282	6,361
Difference	0	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

5.2.2 Single Dry-Year Comparison

In general, and from operational records, the District's demand has shown to increase during a single-dry years as compared to normal years. The water demand increases due to maintenance of landscape and other high water uses that would normally be supplied by precipitation. The demand values shown in Table 5.2-5 were calculated by increasing the target demand projection in each year by the percentage listed for the single dry year in Table 5.2-2. Again, Cal Water assumes that the total supply available will equal the demand in all future years.

As noted in the previous section, groundwater and recycled water are expected to be available in normal amounts during all hydrologic years. And purchased water will provide the balance of supply to meet customer demands. The combined projected purchased water for all four of Cal Water's districts receiving water from WBMWD will be below the Tier I maximum of 70,000 AFY in single dry hydrologic years. According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in single dry years to meet all projected demands. MWD asserts that the policies provided in the 2010 IRP update will insure this reliability. Therefore, the supply is 100 percent reliable in single dry years.

Table 5.2-5: Supply and Demand Comparison - Single Dry Year - AF (Table 33) (Table 32)

	2015	2020	2025	2030	2035	2040
Purchased water	3,343	3,585	3,829	4,076	4,336	4,416
Groundwater	1,882	1,882	1,882	1,882	1,882	1,882
Recycled water	100	101	101	102	103	103
Supply totals	5,325	5,568	5,813	6,060	6,320	6,400
Demand totals	5,325	5,568	5,813	6,060	6,320	6,400
Difference	0	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

5.2.3 Multiple Dry-Year Comparison

As noted earlier, water demand generally increases early in a multiple dry year period then gradually decreases as the drought persists and customers respond to conservation messaging. This pattern is evident in Table 5.2-6 where demands at the beginning of each five year period are higher than in the normal year scenario, and demands decrease each year thereafter. The supplies and demands shown here are calculated by multiplying the target demand projection for that year by the percentages listed in Table 5.2-2 for the multiple dry year period, including recycled water.

Groundwater and recycled water are expected to be available in normal amounts during all hydrologic years. Purchased water will provide the balance of supply to meet customer demands. The combined projected purchased water for all Cal Water's districts receiving water from WBMWD will be below the Tier I maximum of 70,000 AFY in multiple-dry hydrologic years. According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in single dry years to meet all projected demands. MWD asserts that the policies provided in the 2010 IRP update will insure this reliability. Therefore, Cal Water expects the supply to be 100 percent reliable in multiple dry years. Again, no supply deficiency is expected.

Using the recent drought from 2006-2009 as an example, Cal Water expects MWD to begin its Water Supply Allocation Plan during future dry year periods. Although not reflected in the table below, reductions in demand will likely be necessary as the drought persists. As was seen over the last three years, Cal Water's customers have been able to respond and meet these target demand allocations.

Table 5.2-6: Supply And Demand Comparison - Multiple Dry Year Events – AFY (Table 34)						
		2015	2020	2025	2030	2035
Multi-dry year first year supply	Purchased water	2,960	3,185	3,411	3,640	3,881
	Groundwater	1,882	1,882	1,882	1,882	1,882
	Recycled water	100	101	101	102	103
	Supply Totals	4,943	5,168	5,395	5,624	5,866
	Demand Totals	4,943	5,168	5,395	5,624	5,866
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-dry year second year supply	Purchased water	3,050	3,277	3,506	3,048	3,048
	Groundwater	1,882	1,882	1,882	1,882	1,882
	Recycled water	100	101	102	102	103
	Supply Totals	5,032	5,260	5,490	5,032	5,032
	Demand Totals	5,032	5,260	5,490	5,032	5,032
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-dry year third year supply	Purchased water	2,936	2,936	2,936	2,936	2,936
	Groundwater	1,882	1,882	1,882	1,882	1,882
	Recycled water	100	100	100	100	100
	Supply Totals	4,918	4,918	4,918	4,918	4,918
	Demand Totals	4,918	4,918	4,918	4,918	4,918
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

5.3 Factors Affecting Reliability of Supply

Although the historical record shows that the demand can be met by the supply, several factors could impact the reliability of each source, and are listed in Table 5.3-1.

Table 5.3-1: Factors Resulting In Inconsistency of Supply (Table 10)

Name of supply	Legal	Environmental	Water Quality	Climatic
West Basin Municipal Water District	✓	✓	✓	✓
Groundwater	✓		✓	✓

Although unlikely, any change to current agreements with WBMWD or WRDSC could negatively affect the future availability of supply. As discussed earlier the recent Wanger Decision limits the ability of the SWP and CVP to pump water from the Delta during critical supply times due to threatened fish species. At this time it is not known how long these restrictions will be in place or if other fish species will be protected under similar decisions. But environmental concerns such as these could result in a permanent reduction of available imported water supplies.

Before the Wanger Decision restrictions went into effect, short-term drought events were not thought to pose a serious threat to the reliability of supply in the Dominguez District. The buffer of excess imported supplies will not exist as long as Delta pumping is reduced. This decreases the reliability of supply for the Dominguez District. During drought events Cal Water may have to implement voluntary or mandatory rationing depending on the severity of the drought and availability of imported supplies. During extended droughts, as the primary source of supply shifts from WBMWD deliveries to groundwater withdrawals, and the reliability of supply would decrease as the drought event continued.

According to planning documents such as West Basin's 2005 Urban Water Management Plan and MWD's Updated Integrated Resource Plan (IRP), Cal Water can expect 100 percent reliability of supply even in multiple year droughts through 2030. Over time, water conservation and the use of recycled water will offset a portion of future demands. Also, during dry years as deliveries from the Colorado River Aqueduct and the SWP are reduced, MWD will draw water from other storage areas established through groundwater banking and transfer agreements made with other agencies. These agreements are further described in MWD's Water Surplus and Drought Management Plan (WSDM Plan).

5.4 Water Quality

The drinking water delivered in the Hawthorne District, whether its source is groundwater or imported water, must meet or surpass all federal and state regulations. The U.S. Environmental Protection Agency under the authorization of the Federal Safe Drinking Water Act of 1974, sets drinking water standards. The California Department of Health Services (DOHS), which can either adopt the USEPA standard or establish state standards that are more stringent, enforces the EPA mandated drinking water regulations.

There are two types of drinking water standards: Primary and Secondary. Primary Standards are designed to protect public health by establishing Maximum Contamination Levels (MCL) for substances in water that are determined to be harmful to human health. MCLs are established conservatively for each contaminant based on health effects that may occur if a person were to drink two liters of the water per day for 70 years. Secondary Standards are based on the aesthetic qualities of the water, such as taste, odor, color, and mineral content. These standards, established by the State of California, specify limits for substances that may affect aesthetics and consumer acceptance of the water.

Although the water delivered to the customers always has been in compliance with all standards, the quality of the groundwater produced by the District's four wells are highly mineralized and began to exceed the secondary standards for iron and manganese. In addition, these wells extract water in close proximity of the intruded plume of seawater that is inland of the West Coast Basin Barrier.

5.5 Water Shortage Contingency Plan

As mentioned earlier, Cal Water is currently operating the City of Hawthorne municipal water system on a 15 year contract. During this time Cal Water has operated the Hawthorne system as if it where owned by Cal Water, including the implementation of its Water Shortage Contingency Plan. If Cal Water is retained as operator of the system when the contract expires in 2011, this version of the Water Shortage Contingency Plan will continue to be used during water shortage conditions. At the time of writing of this UWMP it is unclear if Cal Water will be awarded the next contract. Some elements of this Water Shortage Contingency Plan will not apply to the Hawthorne system because it is not regulated by the CPUC.

This section contains an updated version of Cal Water's Water Shortage Contingency Plan. The Water Shortage Contingency Plan was last revised in response to the drought that California experienced between 1987 and 1992. The first version of the Plan was included in each subsequent UWMP update.

California's most recent drought event that began in the spring of 2006, coupled with the Delta pumping restrictions, brought increased awareness to the importance of drought

preparedness. By the spring of 2008 it became apparent that several of Cal Water's service districts had the potential for water supply shortages and potential wholesaler allocations in the following year. In response, a Conservation/Supply Team was formed to develop a plan for addressing these potential issues. Through this process Cal Water learned valuable lessons and is better prepared for extended droughts or other long term water shortages. The results of this planning process are summarized in this Water Shortage Contingency Plan.

5.5.1 Water Shortage Contingency Plan Scope

The Water Shortage Contingency Plan is a unique document designed to address specific conditions that may occur from time to time in Cal Water's service areas. It can be triggered by several types of events but is primarily used as a response to longer term drought conditions. The Water Shortage Contingency Plan provides a comprehensive company-wide strategy for approaching water supply shortages that may last from several months to several years in duration.

Other triggers may include a partial loss of supply due to a mechanical failure of either Cal Water or wholesale supplier facilities resulting from natural disasters, chemical contamination, or other water quality issues. These two types of triggers are unlikely in larger districts where operational changes can more easily be made in one part of the system to overcome supply shortages in other parts of the system. However, in smaller isolated systems that rely heavily on one source of supply, a partial loss of this supply could necessitate the implementation of the Water Shortage Contingency Plan. Generally, this type of water supply shortage would not last as long as those caused by drought.

There are some important distinctions that should be made between the Water Shortage Contingency Plan and other programs and plans that Cal Water has for each district. Cal Water also maintains an Emergency Response Plan (ERP) for each service area. The ERP is similar to the Water Shortage Contingency Plan in that it may include a loss of supply and inability to serve our customers with normal quantities of water. However, the ERP is designed to manage crises that occur more suddenly and are caused by events such as natural disasters, technological failures, chemical contamination, or national security emergencies.

The ERP provides a guide for district and general office personnel to follow in response to one of these emergencies. It includes the policies, responsibilities, and procedures to be used to protect public safety and includes the setup of an Emergency Operations Center and implementation of the Standardized Emergency Management System. The ERP also describes the necessary inter-jurisdictional coordination and provides the communications and notification plan to insure an efficient response to the emergency.

The ERP for each district was completed in 2004 in response to the Public Health and Safety and Bioterrorism and Response Preparedness Act (H.R. 3448) of 2002. They were then updated in May of 2008. Cal Water is planning to rewrite the ERPs in the next few

years. These new Plans will include more detailed district-specific information and will be designed to be used as a manual for Cal Water personnel during emergency situations.

Cal Water is also in the process of developing Water Conservation Master Plans for each district. These Water Conservation Master Plans are different from the Water Shortage Contingency Plans in that they are designed to permanently reduce per capita water use by Cal Water's customers. The Water Conservation Master Plans are not associated with any short or long term loss of supply but will have the effect of making existing supplies last further into the future. In the short term, this will also provide increased supply reliability.

The water use targets selected by Cal Water for each service area are consistent with current regulations. In general, this will mean a reduction in per capita demand. Specific reductions will vary by service area and are contained in the service-area specific Water Conservation Master Plans. The annual level of funding for these programs will be determined through each General Rate Case filed with the California Public Utilities Commission (CPUC).

5.5.2 Water Conservation/Water Supply Team

As mentioned earlier, Cal Water formed a Conservation/Supply Team in response to the water shortage conditions that were forecasted for 2009. This Team consisted of an interdepartmental group of personnel that guided the planning process for the company-wide response to the drought. Members of the Conservation/Supply Team include:

- Vice President of Regulatory and Corporate Communications
- Vice President of Customer Service, Human Resources, and Information Technology
- Director of Corporate Communications
- Director of Customer Service
- Conservation Manager
- Chief Engineer
- Water Resources Planning Supervisor
- Manager of Rates
- Manager of Operations
- Maintenance Manager
- Billing Manager
- Regulatory Accounting Manager
- Meter Operations Supervisor
- Support Staff

The Conservation/Supply Team held regular meetings to discuss strategies for all aspects of drought preparation such as water supply monitoring, public communications, wholesale and customer allocations, information technology improvements, and financial impacts. Additional staff participated as needed as the planning process progressed.

5.5.3 Water Supply Allocation Plan

During the most recent drought several of Cal Water's districts were faced with the possibility of reduced wholesale allocations of imported water. If implemented, Cal Water would need to reduce its use of this supply proportionally in order to meet regional conservation targets and avoid wholesaler imposed penalties for overuse. Cal Water would have to request customers to reduce water use, usually to the same level as required by the wholesaler.

These reductions could either be voluntary or mandatory depending on the severity of the cutback required. If mandatory rationing is deemed necessary, retail customer allocations would need to be implemented. To determine the methodology used for customer allocations a cross-functional Water Allocation Team was formed. The Water Allocation Team consisted of a subset of the Conservation/Supply Team and was tasked with developing the details of how the allocation process would be handled internally by Cal Water. The Water Allocation Team reported back to the Conservation/Supply Team at the regular meetings.

The Water Allocation Team meetings resulted in a comprehensive strategy that is summarized in Cal Water's Water Supply Allocation Plan. The Water Supply Allocation Plan details the methodology used for determining customer allocations, conducting public communications, tracking water use, assessing penalties, and processing appeals.

The Water Supply Allocation Plan also outlines regulatory actions that must be taken in order to implement mandatory allocations. If it is determined that mandatory allocations are likely to be necessary in a particular district Cal Water will file a Tier 2 advice letter with the CPUC that describes the need for mandatory allocations as well as our methodology and plan for implementation. A public hearing is required during the 30 days following this filing and all customers in the affected district will be notified of the hearing. If, after the 30 day period, it is determined that mandatory allocations are necessary, Cal Water will file a Tier 1 advice letter with the CPUC, which would make mandatory allocations effective 5 days following the filing.

Cal Water has the legal authority to implement mandatory allocations only after requesting from the CPUC that Tariff Rule 14.1, Mandatory Conservation Plan, be added to existing tariffs. *Section A. Conservation – Nonessential or Unauthorized Water Use* of Tariff Rule 14.1 identifies specific water use prohibitions. Prior to implementing mandatory allocations Cal Water will communicate details of the Plan to all customers.

5.5.4 Allocation Methodology and Customer Information

The Water Allocation Team's methodology for determining customer allocations was decided through careful consideration of all available information. Throughout this process the Team tried to maintain fairness to all customers and develop a plan that was easy to understand and communicate. Secondary concerns included impacts to Cal Water such as the ease of implementation and revenue shortfalls.

Customer allocations will be calculated on a monthly basis for each "premise", or customer location. The required cutback will be a percent reduction from prior use compared to baseline time period. The percentage reduction and baseline that Cal Water uses will be consistent with those used by the regional wholesaler. This will be done to ensure regional coordination between agencies and to offer a clear message to the public. In districts that do not have an imported supply and therefore no wholesaler, Cal Water will choose the percent reduction depending on the severity of the water shortage.

In most cases the percent reduction will be kept constant on an annual basis. It will be reviewed and adjusted as necessary in the spring of each year after the water supply picture becomes clear for the following dry season. In most districts Cal Water does not have direct control over long term storage of imported water and will rely on the California Department of Water Resources, U.S. Bureau of Reclamation, and regional water wholesalers to manage carryover storage between years. In some cases it may be necessary to adjust these percentages mid-year, if, for example, a district is not meeting its reduction target. The allocation period will end when Cal Water determines that the water shortage no longer exists and ample supplies are available on an ongoing basis.

A minimum allocation will be given to single-family residential customers whose monthly allocation would fall below a level that is considered necessary for health and safety. These minimum allocations will be calculated for each district and will include water for indoor consumption on a per capita basis and also a percentage of normal water for outdoor use such as landscape irrigation. Multi-family, commercial, industrial, government, and other service connection categories will not be subject to minimum allocations.

Cal Water will provide customers the opportunity to bank unused water that has been allocated in a billing period. A customer will bank their unused allocation in a given billing period which can then be used to offset a future month where the customer exceeds their allocation. There is no limit to the amount of water that can be banked by a customer. All banked water will expire once allocations are determined to no longer be needed.

As a deterrent to exceeding monthly allocations and to offset penalties that Cal Water may incur from wholesale agencies, a penalty rate will be applied to a customer's water use that is in excess of their allocation. This penalty rate will be charged in addition to the normal tiered rate for every unit (Ccf) above the allocation during a billing period.

If a customer feels that their allocation does not represent their current need, or to dispute penalties assessed to their account, customers can file an appeal with their local district. The appropriate personnel will review the appeal and issue a judgment in writing. The appeals will be reviewed according to rules outlined in the Water Supply Allocation Plan.

During a water shortage priority will be given to uses that promote public health and safety. These uses include residential indoor use and other sanitary purposes. On a case by case basis Cal Water will decide that certain services are seen as essential, such as hospitals, and may exempt the customer from allocations. The second priority will be given to commercial and industrial water use in an effort to minimize financial impacts to local businesses. And finally, outdoor irrigation has the lowest priority.

If Cal Water requests voluntary reductions, all customer categories will be asked to make the same percent reduction. If mandatory reductions are required, which in general means a reduction of greater than 15 percent, Cal Water may develop different demand reduction targets for each connection category. This will be done to enforce the priorities listed above and to ensure that the correct mix of targets are chosen so that the overall district demand reduction goal is reached.

5.5.5 Drought Stages

Cal Water has developed a four stage approach to drought response that corresponds to specific levels of water supply shortage. At each higher stage Cal Water will become more aggressive in requiring water use reductions from its customers. The decision to enter a new stage will be made by careful consideration of a variety of factors including wholesale supply, availability of alternative supplies, time of year, and regional coordinated activities. These stages are designed to guide Cal Water personnel in making informed decisions during water shortages. A certain amount of flexibility is built in to the stages to allow for the unique characteristics of each water shortage event and the unique characteristics within each of Cal Water's districts. In each progressive stage the actions taken in earlier stages will be carried through to the next stage either at the same or at an increased intensity level, thereby becoming more restrictive.

When the water conditions in a district appear to warrant the activation of the Shortage Contingency Plan's Demand Reduction Stages, whether that be via implementing Stage 1, the movement from one Stage to a higher stage, the movement from a higher stage back down to a lower stage, or deactivating the use of Demand Reduction Stages altogether; the Water Conservation /Water Supply Team will consider those conditions at hand and prepare a recommendation on the appropriate action to be taken by the Company. The Team's recommendation will be presented by the Chief Engineer to the Vice President of Engineering and Water Quality. If the Vice President of Engineering and Water Quality concurs with the WC/WS Team recommendation, then he or she will take that recommendation to the President and Chief Executive Officer. The President &

CEO will make the final determination as to whether or not the recommended action is to be taken by the Company.

If it is determined that the Company will implement or change the active Demand Reduction Stage for a given District, then a press release will be made in a manner that advises the customers served by that district of this determination. This press release will explain the desired outcome of the action to implement the appropriate stage. Upon making that determination Cal Water will immediately begin implementing the specific actions identified for the determined stage as outlined in the reminder of this section of the Shortage Contingency plan.

Stage 1 covers water shortages of up to 10 percent and can be used to address annual variations in precipitation and mild drought events that may last only a year or two. All reductions in Stage 1 are voluntary and impacts to customers are minimal. The actions to be taken by Cal Water in Stage 1 are listed in Table 5.5-1.

Table 5.5-1: Demand Reduction Stage 1 (Table 36)

Stage	Water Supplier Actions
1. Minimal 5 to 10 percent Shortage Up to 10 percent Reduction Goal Voluntary Reductions	**Cal Water will:** Request voluntary customer conservation as described in CPUC Rule 14.1. Maintain an ongoing public information campaign. Maintain conservation kit distribution programs. Maintain school education programs. Maintain incentive programs for high efficiency devices. Coordinate drought response with wholesale suppliers and cities. Lobby cities for passage of drought ordinances. Discontinue system flushing except for water quality purposes. Request that restaurants serve water only on request.

Stage 2 includes water shortages of between 10 and 20 percent. Stage 2 will be entered during prolonged water shortages of moderate severity such as those caused by a multi-year drought. Reduction methods can either be voluntary or mandatory depending on the severity of the water shortage. Allocations would likely be implemented when the shortage exceeds 15 percent. Customers will begin to notice moderate impacts to normal water use and companies may begin to have financial impacts. In Stage 2 Cal Water will intensify its conservation efforts by implementing the actions listed in Table 5.5-2. All actions from Stage 1 will be carried through or intensified in Stage 2.

Table 5.5-2: Demand Reduction Stage 2 (Table 36)

Stage	Water Supplier Actions
2. Moderate 10 to 20 Percent Shortage Up to 20 Percent Reduction Goal Voluntary or Mandatory Reductions	**Cal Water will:** Increase or continue all actions from Stage 1. Implement communication plan with customers, cities, and wholesale suppliers. Request voluntary or mandatory customer reductions. File Schedule 14.1 with CPUC approval if necessary. Request memorandum account to track penalty rate proceeds and other drought related expenses. Lobby for implementation of drought ordinances. Monitor water use for compliance with reduction targets.

Stage 3 represents a severe water shortage emergency with a reduction in supply of between 20 and 35 percent. This stage can be triggered by the most severe multi-year droughts, major failures in water production and distribution facilities, or by water quality concerns, especially in smaller isolated systems. A shortage of this magnitude may begin to seriously impact public health and safety, and cause significant financial hardships on local businesses. All reductions will be mandatory and customer allocations would be necessary. During Stage 3 Cal Water will take the following actions listed in Table 5.5-3 which includes all the actions from Stage 2.

Table 5.5-3: Demand Reduction Stage 3 (Table 36)

Stage	Water Supplier Actions
3. Severe	**Cal Water will:**
20 to 35 Percent Shortage	Increase or continue all actions from previous stages.
	Implement mandatory conservation with CPUC approval.
Up to 35 Percent Reduction Goal	Install flow restrictors on repeat offenders.
	Require customers to have high efficiency devices before granting increased allocations.
Mandatory Reductions	Require participation in survey before granting an increased allocation.

Stage 4 is a critical water shortage emergency with a reduction of supply of at least 35 and potentially above 50 percent. This represents an exceptional crisis that could be caused only by the most severe multi-year drought, natural disaster, or catastrophic failure of major water supply infrastructure. Impacts to public health and safety would be significant. In Stage 4 Cal Water will take the additional actions listed in Table 5.5-4 while also continuing or increasing actions from Stage 3.

Table 5.5-4: Demand Reduction Stage 4 (Table 36)

Stage	Water Supplier Actions
4. Critical 35 to 50+ Percent Shortage Up to and above a 50 percent Reduction Goal Mandatory Reductions	**Cal Water will:** Increase or continue all actions from previous stages. Discontinue service for repeat offenders. Monitor water use weekly for compliance with reduction targets. Prohibit potable water use for landscape irrigation.

5.5.6 Water Supply Conditions and Trigger Levels

As described in Section 3, the water supply for Hawthorne District is a mix of imported water, groundwater, and recycled water. Hawthorne's groundwater supply is limited to 1,882 AF. This value is based on the safe yield of the West Coast Basin and is fixed in both wet and drought years. During water shortages the Hawthorne District will have access to this full entitlement, less any amount that has been leased to other agencies, private companies or individuals. An increase in groundwater pumping could be used to offset reductions in imported water deliveries during a supply shortage.

The recycled supply comes through WBMWD. The Hawthorne District delivers approximately 100 AFY of recycled water annually. Recycled water offers a drought proof supply that is available in all years and would not be subject to allocations from WBMWD. During a water shortage Cal Water can make an effort to maximize recycled water deliveries to replace potable water demand.

Cal Water's imported supply for the Hawthorne District also comes through WBMWD, which is a member agency of the Metropolitan Water District of Southern California (MWD). Cal Water's Water Shortage Allocation Plan will ultimately be triggered by

actions within these agencies. Although Cal Water could decide to increase groundwater pumping to make up a portion of the difference in demand, except in unusual circumstances it will follow the lead of these agencies when deciding whether to implement the Water Shortage Allocation Plan. The percent shortage identified by MWD will determine which drought stage Cal Water enters into. These thresholds are shown in Table 5.5-5. The drought stages are discussed in more detail in the following section.

Table 5.5-5: Water Supply Triggering Levels (Table 35)

Stage	Percent Shortage
Stage 1	5 to 10% supply reduction
Stage 2	10 to 20% supply reduction
Stage 3	20 to 35% supply reduction
Stage 4	35 to 50% supply reduction

In April of each year, after the winter storm season, MWD will assess its available water supply and decide if it will request voluntary of mandatory reductions by its member agencies. MWD will judge the performance of WBMWD retailers as a whole and will only assess penalties to WBMWD if the retailers' collective use exceeds its allocation. These reduction targets will be passed along through WBMWD to Cal Water and from Cal Water to our customers. If necessary, the allocation period will begin on July 1st of the given year and will continue at least one year or until the availability of supplies warrants the lifting of water use restrictions.

Cal Water's timeline for implementing its Water Shortage Contingency Plan will generally follow MWD's schedule. However, Cal Water will monitor water supply conditions throughout the year and will independently assess the threat of water shortage conditions. This will allow Cal Water to make the necessary preparations prior to the high water use season when restrictions would likely go into effect. Preparations may include filing the appropriate advice letters with the CPUC, hiring additional staff, training existing staff, making billing system improvements, developing public communications material, making operational changes, and performing maintenance to the water system facilities. This advanced planning will minimize the potential lag time between when a water shortage is declared and when restrictions can take effect. The reduction in lag time is essential in order to maximize the water savings during the high use summer months.

5.5.7 Water Use Restriction Enforcement

Because of its investor owned status Cal Water has limited authority to enforce water use restrictions unless Rule 14.1 is enacted through CPUC approval. Restrictions on water use prior to enacting Rule 14.1 must be regulated by ordinances passed by the local governments in each community served. Cal Water has worked with municipalities to pass ordinances and will continue this effort on an ongoing basis. Rule 14.1 contains a

detailed list of the water use restrictions common to many of these ordinances, and is included as Appendix E of this UWMP. The City of Hermosa Beach has also passed a water conservation ordinance. It is included in Appendix E.

Cal Water maintains extensive water use records on individual metered customer accounts. These records are reviewed in the districts to identify potential water loss problems. In order to protect itself against serious and unnecessary waste or misuse of water, Cal Water may meter any flat rate service and apply the regularly established meter rates where the customer continues to misuse or waste water beyond five days after Cal Water has given the customer written notice to remedy such practices.

During all stages of water shortages, production figures are reported to and monitored by the district manager. Consumption will be monitored through these daily production figures in the district for compliance with necessary reductions.

Cal Water, after one written warning, shall install a flow-restricting device on the service line of any customer observed by Cal Water personnel to be using water for any non-essential or unauthorized use defined in Section A. of Tariff Rule 14.1. Repeated violations of unauthorized water use will result in discontinuance of water service.

5.5.8 Analysis of Revenue and Expenditure Impacts

Cal Water is an investor-owned water utility and, as such, is regulated by the CPUC. On March 8, 1989, the Commission instituted an investigation to determine what actions should be taken to mitigate the effects of water shortages on the State's regulated utilities and their customers. In decision D. 90-07-067, effective July 18, 1990, the Commission authorized all utilities to establish memorandum accounts to track expenses and revenue shortfalls caused both by mandatory rationing and by voluntary conservation efforts. Subsequently, D. 90-08-55 required each class A utility (more than 10,000 connections) seeking to recover revenues from a drought memorandum account to submit; for Commission approval, a water management program that addresses long-term strategies for reducing water consumption. Utilities with approved water management programs were authorized to implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts.

However, the Commission's Decision 94-02-043 dated February 16, 1994, states:

> *10. Now that the drought is over, there is no need to track losses in sales due to residual conservation.*
> *11. The procedures governing voluntary conservation memorandum accounts (see D.92-09-084) developed in this Drought Investigation will no longer be available to water companies as of the date of this order.*
> *12. Procedures and remedies developed in the Drought Investigation that are not specifically authorized for use in the event of future drought in these Ordering Paragraphs will no longer be available to water companies as of the date of this order except upon filing and approval of a formal application.*

(CPUC Decision 94-02-043, Findings of Fact, paragraphs 10-12)

In 2008 the CPUC allowed for the creation of a Water Revenue Adjustment Mechanism (WRAM) and Modified Cost Balancing Accounts (MCBA). The goals of the WRAM and MCBA are to sever the relationship between sales and revenue to remove the disincentive to implement conservation rates and conservation programs especially in times of drought. WRAM and MCBA are designed to ensure that the utilities and ratepayers are proportionally affected when conservation rates are implemented, so that neither party is harmed nor benefits. Because of these regulatory developments Cal Water expects to increase the implementation of conservation rates and conservation programs on a permanent basis.

During water supply shortages Cal Water would expect to see a reduction in revenue. The amount of this reduction would depend on the total amount of water being conserved and the price (tier rate) at which the cutbacks were made for each customer. In other words, the reduction would be roughly equivalent to the quantity charge for the amount of water saved. Cal Water would still receive its monthly service charge fees.

Cal Water has adequate reserves to overcome this short term reduction. These reductions in revenue would also be recovered through the WRAM and MCBA. Through the WRAM and MCBA Cal Water will be able to track its revenue impacts and expenditures during water shortages and recover these losses through the CPUC rate case process in future years. Because of these new mechanisms Cal Water is assured that it will have adequate reserves available to operate normally under water shortage conditions.

Expenditures will not increase due to a mild water shortage condition. Any expenditure made during this time will come out of the normal conservation budget that has been approved by the CPUC. Actions that may be taken include public information campaigns that draw attention to the shortage and steer customers towards our other conservation programs (toilet rebates, washing machine rebates, home audits, etc) that are available. These programs will be paid for by money that is already budgeted. Therefore no additional expenditures will take place. If the water shortage warrants mandatory allocations, Cal Water would need to file an advice letter with the CPUC to seek approval to implement mandatory allocations. This process would include securing any additional funding necessary for the administration of this program. Again, these costs would be recovered through the MCBA and WRAM.

5.5.9 Catastrophic Water Supply Interruption

As mentioned earlier, Cal Water has an ERP in place that coordinates the overall company response to a disaster in any or all of its districts. In addition, the ERP requires each District to have a local disaster plan that coordinates emergency responses with other agencies in the area.

Cal Water also inspects its facilities annually for earthquake safety. To prevent loss of these facilities during an earthquake, auxiliary generators and improvements to the water storage facilities have been installed as part of Cal Water's annual budgeting and improvement process.

During an actual or threatened temporary shortage of imported water to the West Basin, the WRDSC is authorized by the West Coast Basin Judgment to enter into agreements with water purveyors in the basin, which allow the over-extraction of groundwater. This authorized over-extraction can last for four months and may be used to produce a maximum of 10,000 acre-feet. Such agreements are not subject to the "make-up" provisions of the Judgment. If the shortage continues beyond four months, further over-extraction would require court approval.

6 Demand Management Measures

6.1 Statewide Urban Water Demand Reduction Policies

SBx7-7 requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. SBx7-7 requires each urban retail water supplier to develop interim and 2020 urban water use targets. Urban retail water suppliers will not be eligible for state water grants or loans unless they comply with SBx7-7's requirements.

While the City of Hawthorne is not currently a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), Cal Water utilizes the Best Management Practices included in the MOU as a guide when planning and implementing conservation programs.

BMPs are grouped into five categories. Two categories, Utility Operations and Education, are "Foundational BMPs" because they are considered to be essential water conservation activities by any utility and are adopted for implementation by all signatories to the MOU as ongoing practices with no time limits. The remaining BMPs are "Programmatic BMPs" and are organized into Residential, Commercial, Industrial, and Institutional (CII), and Landscape categories. Table 6.1-1 shows the BMPs by category.

Table 6.1-1: MOU Best Management Practices

BMP Group	BMP Name
1. Utility Operations Programs (F)	Conservation Coordinator
	Water Waste Prevention
	Wholesale Agency Assistance Programs
	Water Loss Control
	Metering & Volumetric Rates
	Retail Conservation Pricing
2. Education Programs (F)	Public Information Programs
	School Education Programs
3. Residential (P)	Residential Assistance Program
	Landscape Water Surveys
	High Efficiency Clothes Washer Program
	Watersense Toilet Program
	Watersense Specifications for Residential Development
4. Commercial, Industrial, Institutional (P)	Reduce baseline CII water use by 10% in 10 years
5. Landscape (P)	Large Landscape Water Budget Programs
	Large Landscape Water Surveys

F = Foundational BMP, P = Programmatic BMP

6.2 Water Savings Requirements

The unadjusted baseline demand described in Section 3 does not account for future changes in water demand due to the effects of plumbing fixture efficiency codes, changes in water rates, metering, and existing conservation programs. A portion of the difference between unadjusted and adjusted water use are expected to come from these sources.

Two recent California laws are expected to accelerate the replacement of low efficiency plumbing fixtures – primarily toilets and showerheads – with higher efficiency alternatives.

- AB 715, passed in 2007, amended the California Building and Safety Code to require by January 1, 2014, that toilets sold or installed in California use no more than 1.28 gallons per flush. It also requires that urinals sold or installed use no more than 0.5 gallons per flush.

- SB 407, passed in 2009, amended the California Civil Code to require replacement of low efficiency plumbing fixtures with higher efficiency alternatives when a property undergoes alterations, improvements, or transfer. In the case of single-family residential properties, issuance of a certificate of final completion and occupancy or final permit approval by the local building department for building alterations or improvements will be conditional on the replacement of low efficiency plumbing fixtures beginning in 2014. Single-family property owners are required by law to replace any remaining non-compliant plumbing fixtures by no later than January 1, 2017. After this date, a seller or transferor of single-family residential real property must disclose in writing to the prospective purchaser or transferee whether the property includes any noncompliant plumbing fixtures. For multi-family and commercial properties non-compliant fixtures must be replaced by January 1, 2019. As with single-family properties, final permits or approvals for alterations or improvements are conditional on the replacement of low efficiency fixtures beginning in 2014.

The phase-in dates for AB 715 and SB 407 mean they will not greatly contribute to projected reductions prior to 2015. But they will support projected reductions after this time period. Moreover, since the early 1990's, the sale and installation of toilets manufactured to flush more than 1.6 gallons, showerheads manufactured to have a flow capacity more than 2.5 gallons per minute, and interior faucets manufactured to emit more than 2.2 gallons per minute has been prohibited. These requirements will continue to improve the efficiency of plumbing fixtures in older residential and commercial buildings.

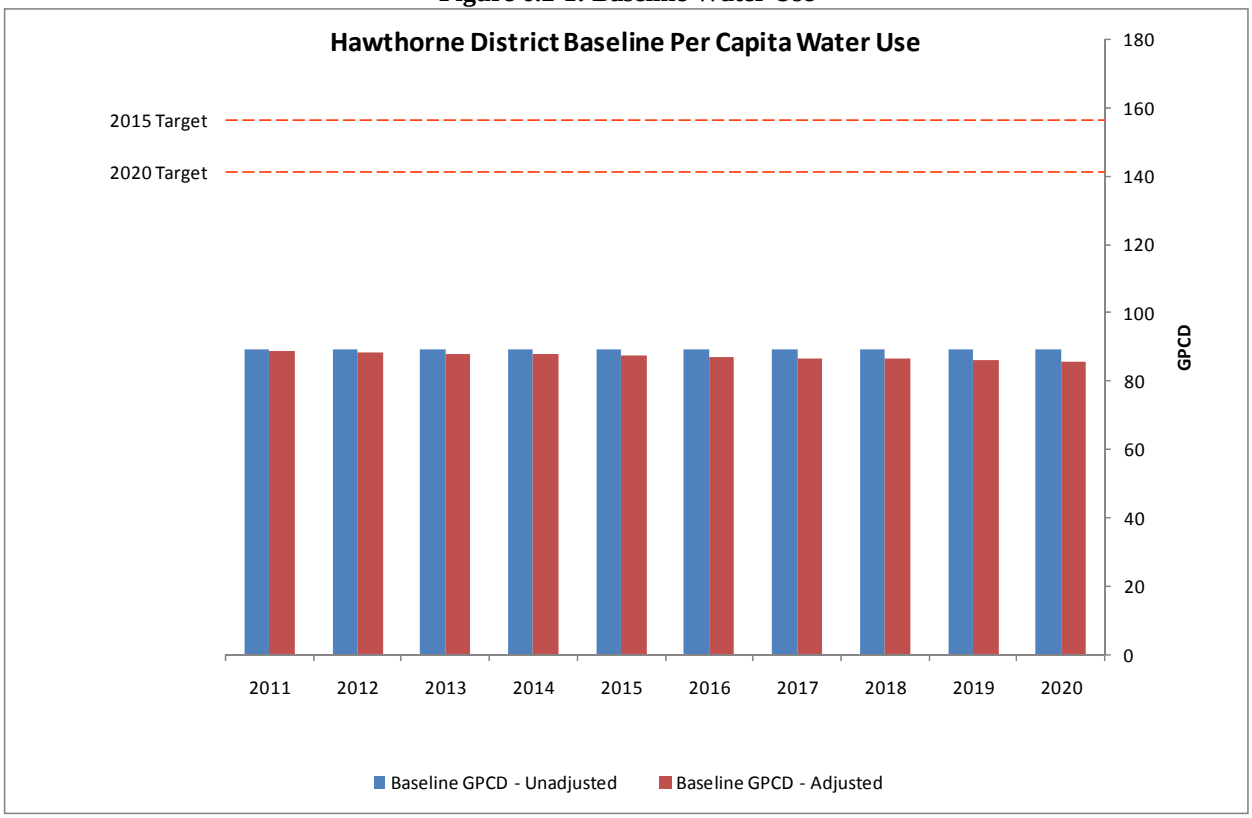
In addition to savings from codes and rates, expected on-going water savings from conservation activity occurring in 2009 and 2010 were also taken into account. The adjusted baseline demand and savings associated with code changes, rate changes, meter conversions, and existing conservation programs are shown in Table 6.2-1.

Table 6.2-1: Baseline Demands

Year	Service Area Population	Unadjusted Baseline Demand	Adjusted Baseline Demand
2011	46,719	4,662	4,642
2012	46,826	4,672	4,637
2013	47,015	4,691	4,640
2014	47,288	4,718	4,651
2015	47,644	4,754	4,666
2016	48,084	4,798	4,689
2017	48,524	4,842	4,712
2018	48,966	4,886	4,737
2019	49,409	4,930	4,762
2020	49,852	4,974	4,788

Under SBx7-7, the objective is to reduce 2015 per capita water use at least to the target of 157 gpcd, and any expected savings from codes, rates, and existing conservation programs can be credited toward meeting this goal. As seen in Figure 6.2-1, water use in the Hawthorne District is already well below both the 2015 and 2020 targets. Hence no additional conservation is necessary if water use remains near historic levels.

Figure 6.2-1: Baseline Water Use



6.3 Conservation Program Portfolio

Cal Water has identified five core programs that it plans to run in every district over the next five years. In addition to the core programs, an additional set of non-core programs was selected. Unlike core programs, Cal Water may not offer non-core programs in every district or in every year. Implementation of non-core programs will depend on whether additional water savings are required for SBx7-7 compliance or to help address local supply constraints. Table 6.3-1 lists all Cal Water core and non-core conservation programs.

Table 6.3-1: Cal Water Conservation Programs

Program Name	Description	Target Market
CORE PROGRAMS		
Rebate/Vouchers for toilets, urinals, and clothes washers	Provide customer rebates for high-efficiency toilets, urinals, and clothes washers	All customer segments
Residential Surveys	Provide residential surveys to low-income customers, high-bill customers, and upon customer request or as pre-screen for participation in direct install programs	All residential market segments
Residential Showerhead/Water Conservation Kit Distribution	Provide residential showerhead/water conservation kits to customers upon request, as part of residential surveys, and as part of school education curriculum	All residential market segments
Pop-Up Nozzle Irrigation System Distribution	Offer high-efficiency pop-up irrigation nozzles through customer vouchers or direct install.	All customer segments
Public Information/Education	Provide conservation messaging via radio, bill inserts, direct mail, and other appropriate methods. Provide schools with age appropriate educational materials and activities. Continue sponsorship of Disney Planet Challenge program.	All customer segments
NON-CORE PROGRAMS		
Toilet/Urinal Direct Install Program	Offer direct installation programs for replacement of non-HE toilets and urinals	All customer segments
Smart Irrigation Controller Contractor Incentives	Offer contractor incentives for installation of smart irrigation controllers	All customer segments
Large Landscape Water Use Reports	Expand existing Cal Water Large Landscape Water Use Report Program providing large landscape customers with monthly water use reports and budgets	Non residential customers with significant landscape water use and potential savings
Large Landscape Surveys & Irrigation System Incentives	Provide surveys and irrigation system upgrade financial incentives to large landscape customers participating in the Large Landscape Water Use Reports programs and other targeted customers	Non residential customers with significant landscape water use and potential savings
Food Industry Rebates/Vouchers	Offer customer/dealer/distributor rebates/vouchers for high-efficiency dishwashers, food steamers, ice machines, and pre-rinse spray valves	Food and drink establishments, institutional food service providers

Cooling Tower Retrofits	Offer customer/dealer/distributor rebates/vouchers of cooling tower retrofits	Non-residential market segments with significant HVAC water use
Industrial Process Audits and Retrofit Incentives	Offer engineering audits/surveys and financial incentives for process water efficiency improvement	Non-residential market segments with significant industrial process water uses

While analysis shows that no further water reductions are needed to comply with SBx7-7 requirements, Cal Water is currently working with the City of Hawthorne to identify funding levels which will help to determine the optimal mix of programs from Table 6.3-1. These programs would assist in lowering demand beyond the adjusted baseline demand levels shown in Table 6.2-1.

7 Completed UWMP Checklist

7.1 Review Checklist

Table 7.1-1, adapted from DWR's *Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan*, is included as a reference to assist DWR staff in review of this UWMP.

Table 7.1-1: Urban Water Management Plan Checklist (organized by legislation number)

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)	Water Conservation		3.3.1
2	Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions.	10608.36	Water Conservation		6
3	Report progress in meeting urban water use targets using the standardized form.	10608.4	Water Conservation		6
4	Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)	External Coordination and Outreach		1.2
5	An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.	10620(f)	Water Supply (Water Management)		1.4
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	10621(b)	External Coordination and Outreach		1.2
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	External Coordination and Outreach		1.2
8	Describe the service area of the supplier	10631(a)	Service Area		2.1
9	(Describe the service area) climate	10631(a)	Service Area		2.3
10	(Describe the service area) current and projected population. . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	10631(a)	Service Area	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	2.2

11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	Service Area	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	2.2
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	Service Area		2.2
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	10631(b)	Water Supply	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	4.1
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .?	10631(b)	Water Supply	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	4.4
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	Water Supply		4.4.2
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	Water Supply		4.4.1
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	Water Supply		Appendix H

18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	Water Supply		Appendix I
19	For basins that have not been adjudicated, (provide) 10631(b)(2) Water Supply information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	Water Supply		4.4.1
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(3)	Water Supply		4.4
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(4)	Water Supply	Provide projections for 2015, 2020, 2025, and	4.4
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Reliability		5.3
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)	Reliability		5.1
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	Water Supply (Transfers)		4.7
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	10631(e)(1)	Water Demands	Consider “past” to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	3.3

26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition;(N) Residential ultra low-flush toilet replacement programs.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	6
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.	10631(f)(3)	DMMs		6
28	An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.	10631(f)(4)	DMMs		6
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	10631(g)	DMMs	See 10631(g) for additional wording.	6

30	(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.	10631(h)	Water Supply		4.9
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	Water Supply		4.6
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the biannual reports are deemed	Appendix E
33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	10631(k)	Water Supply	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	N/A
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	Water Demands		3.3.2
35	Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.	10632(a)	Contingency		5.3.5
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)	Contingency		5.2

37	(Identify) actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)	Contingency		5.3.9
38	(Identify) additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)	Contingency		5.3.7
39	(Specify) consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)	Contingency		5.3.5
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Contingency		5.3.7
41	An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)	Contingency		5.3.8
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Contingency		5.3
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Contingency		5.3.7
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	10633	Recycled Water		4.5
45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)	Recycled Water		4.5.1
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	Recycled Water		4.5.2
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	Recycled Water		4.5.3
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	Recycled Water		4.5.3
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	10633(e)	Recycled Water		4.5.3
50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)	Recycled Water		4.5

51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)	Recycled Water		4.5
52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	10634	Water Supply (Water Quality)	For years 2010, 2015, 2020, 2025, and 2030	5.2.4
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)	Reliability		5.2
54	The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.	10635(b)	External Coordination and Outreach		1.2
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642	External Coordination and Outreach		1.2
56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	10642	External Coordination and Outreach		1.2
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	External Coordination and Outreach		1.3
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	External Coordination and Outreach		1.6
59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	10644(a)	External Coordination and Outreach		1.3

60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	10645	External Coordination and Outreach		1.3
[a] The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.					
[b] The Subject classification is provided for clarification only. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review for completeness.					

APPENDIX A-1: RESOLUTION TO ADOPT UWMP

APPENDIX A-2: CORRESPONDENCES

APPENDIX A-3: PUBLIC MEETING NOTICE

APPENDIX B: SERVICE AREA MAP

APPENDIX C: WATER SUPPLY, DEMAND, AND PROJECTION WORKSHEETS

APPENDIX D: DWR'S GROUNDWATER BULLETIN 118

APPENDIX E: SBx7-7 Target Analysis

APPENDIX F: WATER EFFICIENT LANDSCAPE GUIDELINES

APPENDIX G: PURCHASE AGREEMENT WITH WBMWD

APPENDIX H: WEST BASIN ADJUDICATION ORDER

APPENDIX I: WRD STRATEGIC PLAN